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ENERGY WEST MINING COMPANY
A SUBSIDIARY OF PACIFICORP

P.O. Box 310
15 North Main Street
Huntington, Utah 84528

February 14, 2013

Hand Delivered

Utah Coal Program
Utah Division of Oil, Gas, and Mining
1594 West North Temple, Suite 1210
P.O. Box 145801
Salt Lake City, Utah 84114-5801

Subj: Clean Copy Submittal of Volume 5, Plate 3-9, and Volume 2, Part 3, PacifiCorp, Deer Creek Mine, C/015/0018, Emery County, Utah, Task ID #4242.

PacifiCorp, by and through its wholly-owned subsidiary, Energy West Mining Company "Energy West" as mine operator, hereby submits clean copies for the conditionally approved amendment for the Deer Creek MRP. This amendment included updating the surface facility map and ASCA areas as well as updating the Operation Plan. The Division conditionally approved this amendment on February 5, 2013.

Included with this submittal are two (2) clean copies of the amended map (Volume 5, Plate 3-9, maps 1 of 4 through 4 of 4), and amended text (Volume 2, Part 3, Operation Plan). A C2 form is enclosed for assistance in placement into the plan. Please stamp this submittal and return to us one copy for inclusion into our mining and reclamation plan.

If you have any questions concerning this action, please contact myself at 435-687-4712 or Dennis Oakley at 801-220-4607.

Sincerely,

Kenneth S. Fleck

Kenneth Fleck
Geology and Environmental Affairs Manager

Cc: file

File in:
☐ Confidential
☐ Shelf
☒ Expandable
Date Folder: 021413 C/0150018
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APPLICATION FOR COAL PERMIT PROCESSING
Detailed Schedule Of Changes to the Mining And Reclamation Plan

Permittee: PacifiCorp
Mine: Deer Creek Mine **Permit Number:** C/019/0018
Title: Amendment to Volume 5, Plate 3-9, and Volume 2, Part 3, PacifiCorp, Deer Creek Mine, C/015/0018, Emery County, Utah.

Provide a detailed listing of all changes to the Mining and Reclamation Plan, which is required as a result of this proposed permit application. Individually list all maps and drawings that are added, replaced, or removed from the plan. Include changes to the table of contents, section of the plan, or other information as needed to specifically locate, identify and revise the existing Mining and Reclamation Plan. Include page, section and drawing number as part of the description.

			DESCRIPTION OF MAP, TEXT, OR MATERIAL TO BE CHANGED
☐ Add	☒ Replace	☐ Remove	Volume 2, Part 3, replace entire text section (retain all exhibits)
☐ Add	☒ Replace	☐ Remove	Volume 5, Plate 3-9 (1 of 4 thru 4 of 4)
☐ Add	☐ Replace	☐ Remove	
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Any other specific or special instruction required for insertion of this proposal into the Mining and Reclamation Plan.

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Table of Contents

R645-301-511.100

DEER CREEK MINE OPERATION

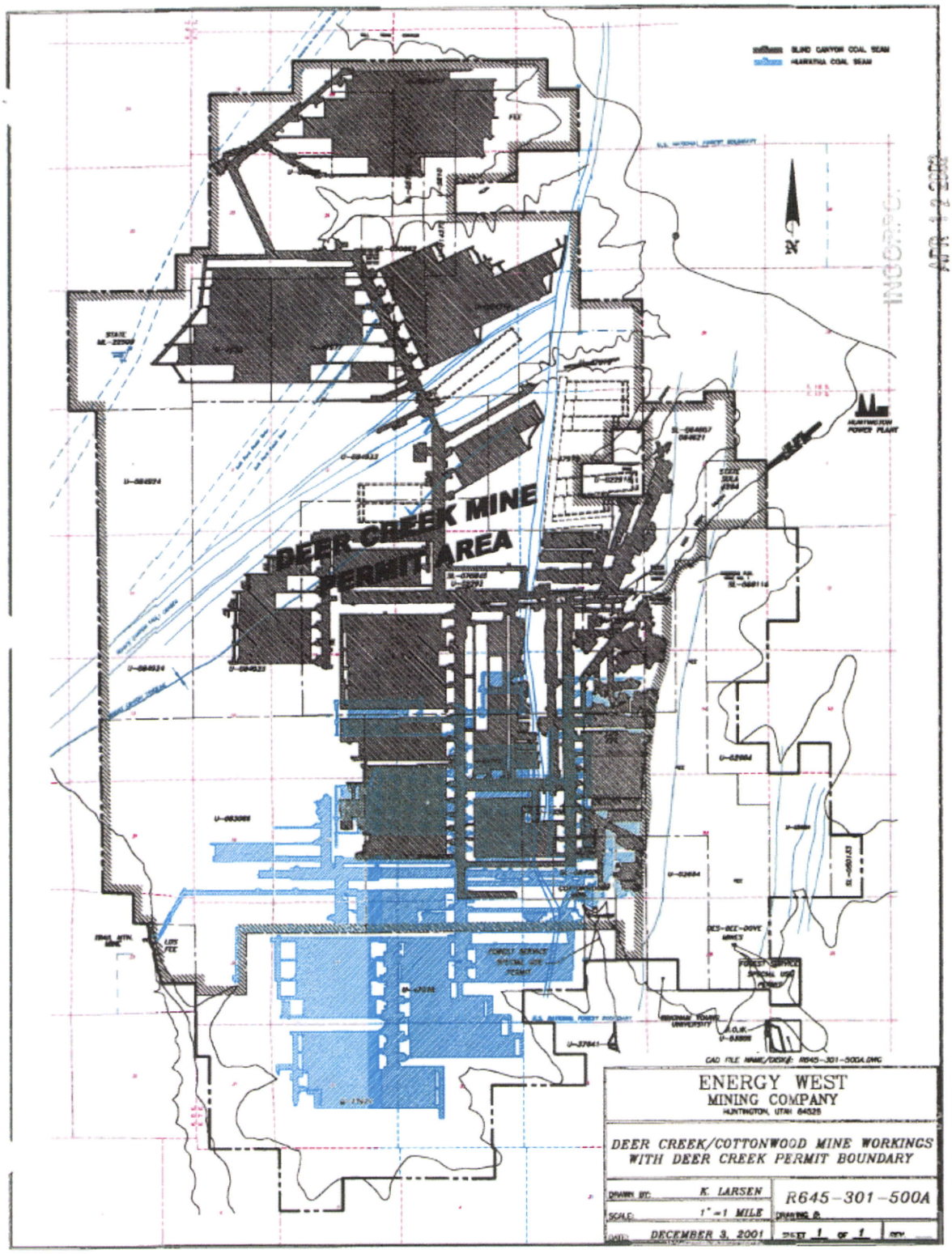
Deer Creek Mine is named for the canyon in which it is located. Private coal mining operations were conducted on fee land in Deer Creek prior to 1946 when the first federal coal lease was issued in this area. No information is available on tonnage removed.

Peabody Coal Company acquired leases on the Deer Creek property and began operations in 1969. In 1977, Utah Power and Light Company purchased the Peabody operation and leases.

Two minable coal seams exist in the Deer Creek Mine area. Blind Canyon (upper seam is mined mainly from Deer Creek Mine). Hiawatha (lower seam is mined mainly from Cottonwood/ Wilberg); however, portions of this seam will be mined by Deer Creek. Both Cottonwood/Wilberg and Deer Creek Mines are owned by PacifiCorp (successor in interest to Utah Power and Light Company, now Rocky Mountain Power). Relative locations of these two mines are shown on Figure R645-301-500A.

Deer Creek portal is located in Deer Creek Canyon on the northern end of East Mountain in Emery County, Utah. Mine personnel and coal handling facilities are located there.

Approximately 9,000 acres (includes Mill Fork Lease Area) of mineable coal are accessible in the Blind Canyon seam from the Deer Creek Mine. Mining plans include ramping down from the north end of the Deer Creek Mine to the Hiawatha Seam to mine approximately 1640 acres. The anticipated Deer Creek life-of-mine production is approximately 150 MM (includes Mill Fork Lease Area) tons.



This anticipated production will be obtained by utilizing two to three continuous mining units and one longwall mining systems. Deer Creek presently operates two continuous mining units and one longwall mining system.

The Deer Creek mining plan has progressively changed with the introduction of more efficient mining methods. The Deer Creek mine is developed with mains and sub-mains which support a series of longwall mining panels. This system is very effective in extracting and maximizing coal recovery. Approximately 70% of the Deer Creek minable coal reserve will be extracted by longwall mining systems, 30% will be extracted by continuous miner development and limited pillar extraction.

The extracted coal is sized in the Deer Creek coal handling facility and conveyed to the Utah Power - Huntington Power Plant, approximately two miles. A portion of the coal is also transferred from the Huntington Plant to the Carbon and Hunter plants.

R645-301-523

MINING PLAN

The Deer Creek mining plan is based on the geologic information outlined in Geology Description. Good knowledge of the entire property is available from the outcrop and drilling. Detailed knowledge of a smaller part of the property is known from mining operations.

The mining areas are bounded by natural and imposed limits with varying degrees of confidence as to location and extent:

Lease boundaries - definitely located and invariable in the short term.

Faults - may vary somewhat from currently assumed locations.

Stratigraphic thinning (pinchout) - mining limits may vary hundreds of feet as information becomes available and as mining recovery economics and practicality are studied further.

Underground burned areas - from a practical point of view are indeterminate prior to mining.

Regulatory mining restrictions - such as escarpment protection barriers and perennial stream buffer zones.

Permit boundary and approximate locations of faults affecting the Deer Creek Mine plan are illustrated in Figure 1. Faults influencing the mining plan are the Pleasant Valley Fault, Deer Creek Fault, and Roan's Canyon Fault.

Mining limits in the Blind Canyon and Hiawatha Seam include the 7 foot seam thickness. The underground mining machines now employed in the Deer Creek Mine are, by design, limited to a 7 foot coal seam. The Blind Canyon 7 foot thickness limit is present in the southern area of the Deer Creek Mine and the western area of the north reserves accessed through the Roan's Canyon Fault.

The interburden in the minable area where the two seams overlap averages about 80 feet. Mining will commence in interburden thickness of 30 feet or greater when extracting both seams.

Since part of the area of the Cottonwood Mine is overlain by areas of the Deer Creek Mine, detailed mine scheduling has been undertaken to ensure that the upper seam is mined prior to the mining of the lower seam while still following good mining practices in generating the mine layout. In addition, the mining plans are designed with a system of barriers for protection of the 345 KV transmission line.

The mine layout, as illustrated in Maps 3-6 and 3-7 is an arrangement of longwall panels and development sections interconnected by systems of main and sub-main entries. This arrangement is predicated on geographical dedication of reserves, regulatory mining restrictions, available coal quality and geologic information. Better knowledge of the geology and quality parameters of the coal reserve through additional drilling, mine development work, and

continued operating experience at Huntington Power Plant will influence future mining techniques and mine plans.

The planned mine development sequence accommodates longwall panels as the primary means of efficiently extracting the reserves. Longwall mining systems are far superior to other mining methods in terms of overall coal recovery, safety, consistent coal quality and operational efficiency. In areas of the mine where overburden, coal quality or ground conditions are a concern, only longwall systems will be employed to extract the reserves. This will ensure the best possible means of maximizing reserve recovery while maintaining consistent coal quality and ground control. The sequence of mining at Deer Creek is shown on Maps 3-6 and 3-7.

Plans for roof control, ventilation system, and methane and dust control have been submitted to MSHA and are filed in the MSHA district office; Mine Safety and Health Administration, PO Box 25367, Denver, Colorado 80225.

The breakouts in the North Fork of Meetinghouse Canyon have been established for mine ventilation airways. As required by MSHA, these portals will be designated as emergency escapeways and, therefore, require access from the portals into the canyon. If, in the case of an emergency which would cut off all other routes of escape and these portals were used, the personnel could make their way to the canyon floor on foot.

Each of the two portals is approximately eight feet high and twenty feet wide with horizontal separation of one hundred feet between centers. Each portal is fenced to prevent entry and posted with warning signs. All necessary studies and construction of the North Fork Meetinghouse Canyon breakouts have been completed.

The coal seams at this location strike in a north-south direction and dip to the west at 1.3 degrees. Because of this fact, any water produced near the portal would flow downdip into the mine rather than flowing out of the mine. Berms have been installed at the portals for additional protection.

Breakouts in the South Fork of Rilda Canyon were developed in 1995. Two portals were developed at this location to support a ventilation fan, power substation and water tank/pumphouse for fire protection. The breakouts are located in the Blind Canyon coal seam.

R645-301-523

MINING METHOD

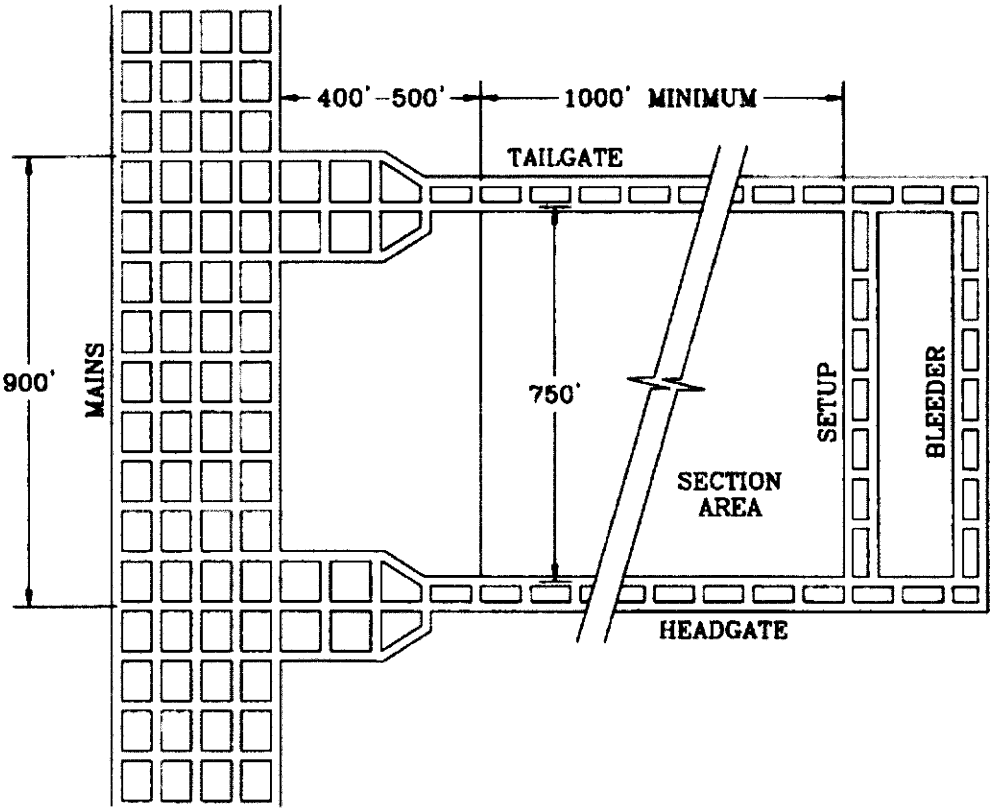
Continuous Mining Units

The principle purpose for continuous mining units in Deer Creek Mine is development; i.e., driving main entries, headgates, tailgates, bleeder and setup entries for the longwall panels.

Figure R645-301-500B illustrates the basic configuration of the main entries. A six-entry system is planned for the main headings with openings driven 20 feet wide on 80 by 100 foot centers. The pillars created thereby measure 60 feet by 80 feet, a size which, has been recently developed for sufficient support of the overlying strata and mine entries.

Development work for the longwall panels is illustrated in Figure R645-301-500C. Headgates and tailgates are being driven with two entry systems on 50 foot by 100 foot centers. Bleeder entries are driven on 50 foot by 100 foot centers. With retreating longwall mining systems, all development work is accomplished by continuous mining units prior to longwall equipment installation.

In those areas where longwall mining is not practicable and economic conditions are favorable, room-and-pillar sections may be developed as production sections for continuous mining units. For development of room-and-pillar sections at Deer Creek Mine, five entries will be opened on advance with two or more developed on retreat in conjunction with pillar extracting. Openings are 20 feet wide on 50 foot by 100 foot centers. The sequence of pillar recovery is shown in Figure R645-301-500D (near the end of advance and beginning of retreat and pillaring). However, the predominant mining method will be the longwall mining system which achieves much higher recovery percentages.



R645-301-500B
TYPICAL CONFIGURATION OF LONGWALL EXTRACTION
AT THE DEER CREEK MINE

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CAD FILE NAME/DISK#: R645-301-500B.DWG

ENERGY WEST MINING COMPANY HUNTINGTON, UTAH 84528	
DEER CREEK MINE TYPICAL CONFIGURATION OF LONGWALL EXTRACTION	
DRAWN BY: K. LARSEN	R645-301-500B
SCALE: NONE	DRAWING #:
DATE: DECEMBER 3, 2001	SHEET 1 OF 1 REV.

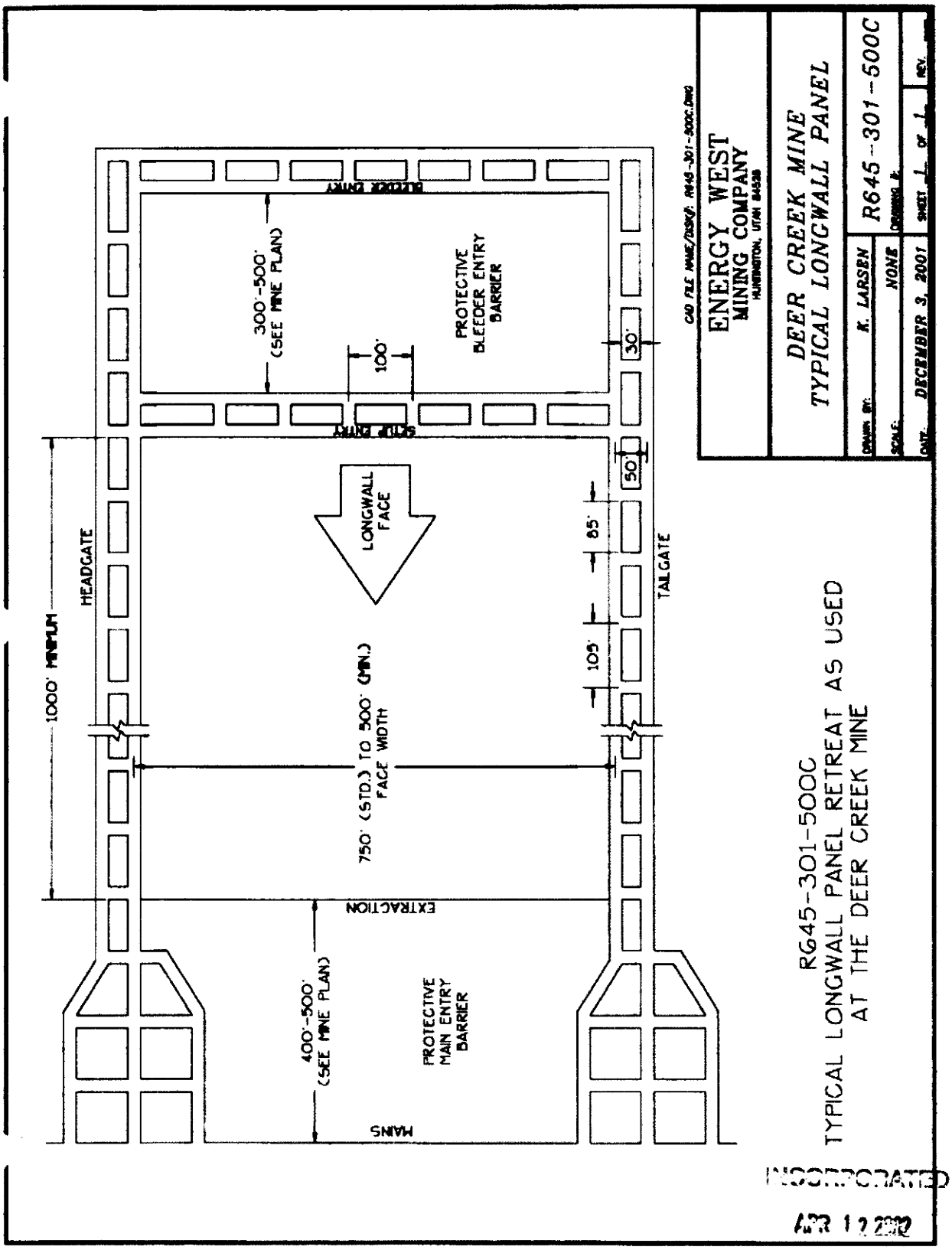
Longwall Mining System

Longwall coal mining as it is currently practiced in presents the safest and most efficient mining method that is available.

The longwall method used is the retreating type. After development entries are driven to the extent of the panel length on both sides of the longwall face, setup entries are driven to connect the development entries. A mining face, 500 to 1000 feet wide (depending on circumstances) is developed, and the longwall equipment installed. Mining proceeds back towards the main entries. A barrier of approximately 400 to 500 feet is left between the mined out longwall panel and the main entries.

Panels are designed with two-entry development systems on 50 foot by 100 foot centers. Entries are developed on 100 foot centers for two pillars before they are decreased to the 50 foot by 100 foot centers. The 50 foot by 100 foot centers on the development entries are designed on the yielding pillar principle. This means they will gradually crush out as the second longwall panel mines by them. The purpose of this feature is to prevent the buildup of unrelieved stresses in the pillar which, in the past, has resulted in sudden and violent failure of pillars with its accompanying danger to personnel and property.

The longwall panels are designed to be as long as possible within the property boundaries. Geologic features are the principal limiting factors. Due to the time involved in moving a longwall mining system, the minimum panel length considered is 1500 feet.



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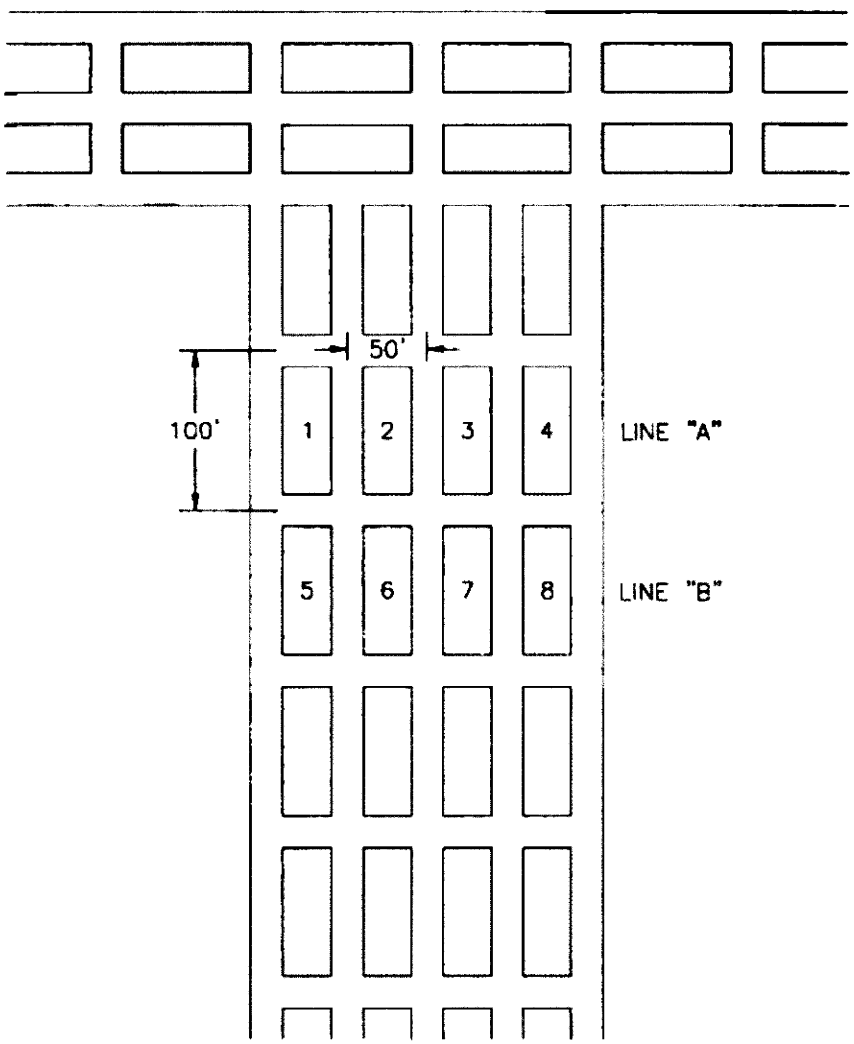

PILLARS IN LINE "A" WILL BE RECOVERED FIRST. STARTING AT PILLAR #1 GOING TO #4. THEN THE PILLARS IN LINE "B" WILL BE RECOVERED.

R645-301-500D
SEQUENCE OF PILLAR RECOVERY

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CAD FILE NAME/DISK#: R645-301-500D.DWG

ENERGY WEST
MINING COMPANY
HUNTINGTON, UTAH 84528

DEER CREEK MINE
SEQUENCE OF PILLAR RECOVERY

DRAWN BY: K. LARSEN		R645-301-500D
SCALE: 1"=100'		DRAWING #:
DATE: DECEMBER 3, 2001	SHEET 1 OF 1	REV.

Coal Recovery

The maximum amount of economically recoverable coal will be extracted from this mine with the exception of protective coal, which must be left in place to ensure the integrity of the mine. This protective coal can be broken into two separate categories of barrier coal and strata control coal.

One hundred (100) foot wide barrier pillars are left between room-and-pillar panels to prevent abutment pressures from adjacent sections from carrying over to the active section. These barrier pillars also act as fire isolation barriers, should a combustible incident arise in any particular panel.

Barriers either 300 feet or 400 feet wide are left between major room-and-pillar panels. Barriers from 400 to 500 feet are left between longwall extracting panels and the main entries in the mine. These major pillars protect the main entries, which contain the intake and return airways, and transportation systems, during mining in the particular area of the mine that these entries serve.

Strata control coal is left in areas where the floor or roof rock is unstable and subject to failure. This coal will be left as a safety measure, during the development of the section, and will be extracted during the retreat of the section if safely possible.

As in the case with both our standard systems of mining for Deer Creek Mine, it is our intention to maximize the amount of coal recovered from our lease areas, subject only to feasible economic constraints, coal quality and mine safety considerations.

It is anticipated that occasions will arise when resource recovery cannot be fully accomplished, as outlined by the mine plan, due to difficult mining conditions, unforeseen geologic conditions, regulatory restrictions or degradation of the minable coal quality. However, before any modification is made, it will first be discussed with the appropriate BLM officials for approval.

Abandonment of the coal mine will be accomplished by a series of systematic sealings of worked out areas within the mine. As each series of panels of the mine are extracted, the gob area left behind will be sealed off from the mine atmosphere by constructing seals. These seals will be constructed in accordance with MSHA regulations.

Within the area of the Wasatch Plateau, coal seams are known to be present in two formations, the Blackhawk and the Ferron Sandstone member of the Mancos Shale. Coal seams within the Ferron Sandstone outcrop to the southeast and are of economic importance in that region (Emery Coal Field). However, the presence of these seams at depth below East Mountain can only be speculated because no data is available to prove their existence. If coal seams do exist in the Ferron Sandstone they would be at presently unmineable depths of 4,000 to 4,500 feet below the Deer Creek Mine workings. The future recovery of these speculative coal reserves will, in no way, be influenced by the present or proposed workings of Deer Creek.

R645-301-500: Table 1 identifies the number of acres affected by mining for each five year period. In areas of seam overlap, only the first mining in the area is considered in calculation of acreage. Subsequent mining in the other seam is not considered since the area has previously been affected.

PERIOD	*ACRES*
Peabody Coal Company	915.7
1978-1983	968.6
1984-1988	803.4
1989-1993	1,098.5
1994-1998	1,375.6
1999-2003	772.7
2003-2007	1,456.7
2008-2012	1,240.4
2013-2017	272.1
2018-2020	119.0

R645-301-523

MINE PRODUCTION

It is expected that with the increasing emphasis on production sections as opposed to development sections, an average production rate of 1,200 tons/machine shift for continuous miners and 10,000 tons/machine shift for longwalls is deemed attainable in the future. Table 2 lists the actual/anticipated annual and total production of coal at Deer Creek Mine.

R645-301-500: TABLE 2
DEER CREEK MINE
ACTUAL/ANTICIPATED ANNUAL COAL PRODUCTION

YEAR	*PRODUCTION*	*YEAR*	*PRODUCTION*	*YEAR*	*PRODUCTION*
1978	1,274,909	1979	1,863,150	1980	2,101,104
1981	1,902,628	1982	2,371,936	1983	2,175,544
1984	1,894,317	1985	2,014,990	1986	2,062,280
1987	2,504,140	1988	2,935,100	1989	3,303,511
1990	3,356,225	1991	3,036,618	1992	3,539,175
1993	3,237,562	1994	4,022,410	1995	4,142,193
1996	4,337,999	1997	4,479,705	1998	3,747,875
1999	3,830,746	2000	4,259,012	2001*	4,358,518
2002	4,568,000	2003	4,421,000	2004	4,411,000
2005	4,438,000	2006	4,421,000	2007	4,597,000
2008	4,628,000	2009	4,144,000	2010	4,167,000
2011	4,128,000	2012	4,065,000	2013	3,953,000
2014	4,104,000	2015	4,057,000	2016	4,219,000
2017	3,753,000	2018	3,469,000	2019	3,938,000
2020	102,000	* 2001-2020 Projected Tons			

A year's production of the longwall can change from year-to-year because of the configuration of longwall panels to be mined. If short panels are mined, more longwall moves would occur. Additional days would be spent moving the longwall rather than production days.

It is expected that recovery rates of 80% can be obtained within the longwall panels. The estimated overall mineable reserve recovery for Deer Creek Mine is 60%. The sequence of

developing panels is dependent upon production requirements, mining efficiency, and geologic parameters of the coal deposit. Coal requirements are based on a planned annual production rate of 4.0 to 4.5 MM tons for the mine. Total recoverable reserves within the Deer Creek Mine's boundaries are estimated at 148 MM tons (this includes Mill Fork Lease Area). Average production for the Deer Creek Mine is based on a rate of 1,150 tons/machine shift for continuous miners and 9,500 tons/machine shift for longwalls. Table 2 lists the actual/anticipated annual and total production of coal from the Deer Creek Mine. Production is achieved by two miner sections and one longwall section operating 2 shifts/day, 4 days/week, 190 days/year in order to achieve the required coal output at full production. These production shifts are 10 hour shifts normally producing Monday through Thursday, with supplemental production and necessary construction performed by assigned workers on the weekend crews (Friday through Sunday). A coal transfer raise between Deer Creek Mine and Wilberg allows coal to be transferred from Deer Creek to the Cottonwood coal handling system. The coal transfer shaft was sealed when Cottonwood Mine was temporary sealed (temporary cessation of operations) in May 2001.

All in-mine coal haulage is by belt conveyor. Of the total entries in the main entry system, at least one entry is dedicated specifically to the belt conveyor. All men and materials are transported underground by diesel equipment. Table 3 lists the major ancillary equipment used in Deer Creek Mine.

R645-301-500: TABLE 3 DEER CREEK MINE - MAJOR UNDERGROUND ANCILLARY EQUIPMENT		
Continuous Mining Units	Longwall Mining Units	Longwall Mining
2-Continuous Miners	2-Face Conveyors	Compressors
4-Shuttle Cars	1-Double Ended Shearers	Transformers
6-Scoops	132-Shield Type Supports	Conveyor Systems
3-Roof Bolters	2-Stageloaders	Welders
4-Rock Dusters	2-Lump Breakers	Battery Chargers
2-Power Centers	3-Scoops	Welders
2-Feeder Breakers	2-Transformer	Material and Equipment
	1-Petito Mule	Trailers
		Diesel Scoops
		Pickups
		Road grader
		Dozer
		Diesel Mantrips
		Diesel Tow Vehicles

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ENGINEERING PRINCIPLES AND TECHNIQUES

A variety of engineering principles and techniques are applied in the Deer Creek Mine operation. Principles of engineering employed are those associated with standard prudent mine engineering practice. Employment of knowledgeable experienced personnel make application of such principles possible. Engineering design techniques for Deer Creek Mine include computer simulation of coal extraction, ventilation, roof control, subsidence, equipment performance and pumping systems, along with materials testing for rock mechanics and subsidence parameters.

Long range mine planning by computer simulation plays an important role in design. Computer simulation of coal extraction assists the engineers in projecting annual tonnages and sequencing extraction in panels and sections. Computer based long-range planning helps to maximize annual production and better utilize continuous mining units and longwall mining systems. The

two seam nature of the property and consequent need to extract upper seam panels and sections increases the value of these simulations.

Ventilation and dust suppression are essential in underground mining operations. Delivering air and water from their respective sources to fulfill these needs can become complicated in a large operation. Simulations of ventilation and hydraulic networks play a significant role in planning for future needs and installing systems for delivery. Deer Creek Mine planning includes these ventilation and hydraulics simulations.

Computer assisted rock mechanics and roof control studies are a necessary part of mine planning. The long-term stability of the entries directly affects mine integrity as well as a protection of property and mine production. Because of the areal extent of the Deer Creek property, mine integrity must be maintained for extended periods up to 50 years. Rock mechanics studies have been extensive, with several in-house and outside evaluations and participating in ongoing cooperative projects with the US Bureau of Mines.

The determination of rock strength, entry stress distribution, abutment loads, and roof support design have been consistently studied. Holes are drilled downward or upward from existing Deer Creek entries within the mine to determine coal quality and interburden characteristics. This data is continually processed to aid in efficient design of the Deer Creek mining layouts.

R645-301-526

MINE FACILITIES - DEER CREEK CANYON

Introduction

Deer Creek Mine facility is located on a 20 acre site at the junction of Deer Creek Canyon and Elk Canyon as shown on Map 3-9. The site is characterized by moderate vegetation and rugged, steep terrain. Surface facilities include the following: sediment pond, embankment fills, coal surge bin, transfer tower, breaker station, crusher station, coal weigh bin, truck load-out, facility conveyors, overland conveyor, parking lot, parking garage, office-bathhouse, warehouse-shop, materials storage area, access and service roads, mine ventilation fan, power supply and

substations, water treatment system, sewer treatment system, and drainage system. Access to the surface facilities is controlled by an automated security system. The system consists of automated traffic gates, electronic surveillance equipment and card readers. See Packet 3-9 for location of the system. Specific locations of mine facilities are shown on Map 3-9. All facility plans are on file at PacifiCorp: Energy West Mining Company, 15 North Main, Huntington, Utah. They are available for public inspection.

With the exception of roads and conveyors, a narrative follows explaining the construction, use, maintenance, and removal of the afore named facilities.

Dams, Embankments, and other Impoundments

Sediment Pond - A pond has been designed and constructed for sediment control at Deer Creek Mine. The pond design capacity is 12.51 acre-feet, 3.11 acre-feet for sediment, 8.13 acre-feet for runoff. The pond design will impound runoff from the 10 yr./24 hour precipitation event of 2.25 inches. All runoff from 22 acres of disturbed area is collected and routed through the sediment pond. Runoff is detained for 24 hours through use of a manual slide gate valve. A grouted rip-rap spillway is installed in the dam to provide controlled release of runoff from a 100 yr./ 24 hr. precipitation event.

Construction and design of the pond was under the direction of a registered professional engineer. Details of pond construction are included in Existing Structures. The pond is a combination incised and embankment structure. The pond excavation is located mainly in the hard rock strata of the steep Deer Creek Canyon walls. The excavated rock was used in extending the yard fill for additional materials storage and personnel parking.

Pond slopes vary depending on the material in which they are constructed. Those constructed in rock have 1H:4V slopes. Fill slopes are 2.5H:1V. The rip-rapped upstream dam slope is constructed at 2.5H:1V. The downstream dam slope is 2H:1V. Slopes constructed on fill have been revegetated to minimize erosion (Fall 1988).

The outlet works for the sediment pond are constructed of 24" CSP, screened to prevent clogging and capped with a skimmer ring.

Maintenance of the sediment pond includes quarterly inspections and monthly discharge monitoring. A copy of the inspection reports is submitted annually to the Division by a registered professional engineer. A copy of the discharge report is submitted monthly to the Division. The pond will be dredged of sediment when sediment volume is 60% of design capacity.

The cleaning of the sediment pond is very time consuming, costly and difficult. To prolong the times between cleaning the sediment from the pond, a "Sediment Retention Box" has been installed on the west bank of the pond. The Sediment Retention Box will reduce the cleaning of the pond to an estimated once every 5 to 8 years. The Sediment Retention Box will be cleaned 2 to 3 times a year or as needed.

The inside dimensions of the box are 35 ft. long, 15 ft. wide and 8 ft. high. The volume is 155 cubic yards (0.1 acre ft.) and will be cleaned at 80% capacity. The walls are reinforced concrete, 1 ft. thick. A diversion dam is constructed downstream of the culvert outlet near the Weigh Bin Building. The diversion dam is of reinforced concrete, one slide gate and is anchored by dowelling to the bottom of the existing pond inlet channel. When the gate is open, flow will enter into the 12 inch PVC pipe leading to the Sediment Retention Box. In the event that the 12 inch culvert cannot handle the storm event flow, the water will flow over the diversion and enter the sediment pond. The overflow channel is the same design and dimensions as the existing channel. The Sediment Retention Box will be removed from operation if ice build-up problems occur, due to winter conditions. Winter runoff will go directly to the sediment pond if this occurs.

Access to the Sediment Retention Box is provided for removal of the accumulated sediment. Under normal operation, the disturbed water will enter the diversion dam and flow through the 12 inch by-pass into the box. A series of removeable baffles are installed in the box to increase the effective settling distance. The water then exits the box into the existing sediment pond via

four 1' half-round pipes. A 24" half-round discharge culvert carries the flow from the retention box to the pond. Minor erosion at this discharge point will be controlled by extending the half-round into the pond below the normal water level. When the box fills to 80% capacity, the gate at the diversion dam will be closed, directing the flow directly to the pond. The box will be decanted into the pond and the sediment will be removed and hauled to the Deer Creek Waste Rock Facility for disposal. Once the box is cleaned the gate at the diversion dam will be opened again returning to normal operation.

The Sediment Retention Box will be removed in conjunction with reclamation of the sediment pond.

Reclamation of the pond will complete the proposed Deer Creek reclamation process. The pond will be allowed to dry followed by backfilling and grading. Graded contours will be compatible with the natural surroundings. Revegetation will be performed as outlined in Reclamation Plan.

Mine Facilities Pad - An earthen fill structure is utilized for material storage and personnel facilities. The fill occupies approximately 8 1/2 acres. Construction material for the fill was obtained from the south slope of the Deer Creek drainage and from the sediment pond excavation.

Approximately 50% of the fill structure is asphalt or concrete surfaced providing access to mine facilities and personnel parking. The remaining 50% is utilized for material storage and electric substation. All runoff from the fill area is collected by culvert inlets in the disturbed drainage system.

Maintenance of the fill is minimal. Periodic inspections are made to observe changes in the stable condition of the fill. Resurfacing of parking areas, regrading of graveled surfaces will be done as needed. In order to maintain the surface grade and stability of the fill, yard drains will be inspected and cleaned annually for proper drainage.

Reclamation of the fill will involve removal of drainage structures, grading and revegetating.

Once the drainage structures are removed, the fill will be graded to contours compatible with the natural surroundings. Regraded slopes will be no greater than 2H:1V. The graded slopes will be revegetated and contoured as discussed in Reclamation Plan.

Ventilation Fan Pad - Deer Creek Mine is ventilated through a 150' vertical shaft. The fan is mounted on an earth fill structure behind the mine offices. The 150' x 50' structure is a cut-and-fill in the north slope of Deer Creek drainage.

Potable water storage and diesel fuel storage (for the ventilation fan back-up motor) are located on a similar structure adjacent to the ventilation fan pad - at a slightly higher elevation. This cut and fill structure is approximately 200' x 50'.

All runoff from these structures is collected in the disturbed drainage system. The outslopes of the fills have been revegetated to minimize erosion. (Fall 1988)

Maintenance of this structure involves periodic inspections to monitor stability. Grading will be carried out as needed to maintain proper drainage.

Removal of this structure is discussed in the Reclamation Plan.

Overburden and Topsoil Handling and Storage

At present, no structures or facilities exist specifically for overburden and topsoil handling and storage at Deer Creek Mine, with the exception of the Waste Rock Facility (see Volume 10). All overburden removed in the mine area has been utilized as construction material for earthen fill structures.

Coal Handling Facilities

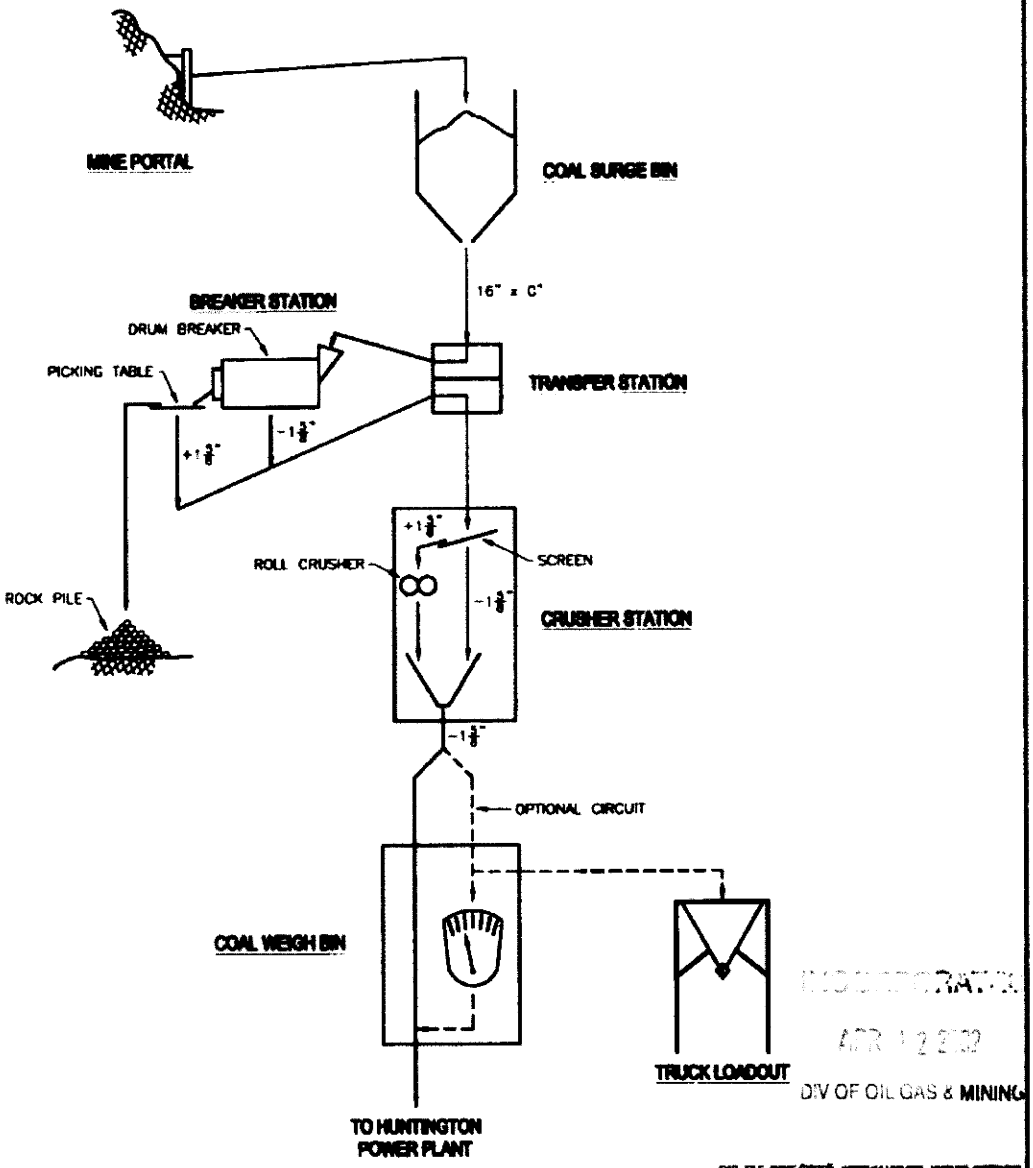
The coal handling system at Deer Creek Mine is designed to prepare a -1 5/8" product for the Huntington Power Plant. Figure R645-301-500E is a simplified flowsheet to clarify the following facility description.

Coal Bin - The 16" x 0" ROM product is delivered approximately 1,350 feet from the mine portal to a coal surge bin. The coal bin is constructed in the rock strata of the west slope of Elk Canyon. Bin capacity is approximately 30,000 tons. The recovery cone at the base of the bin was excavated from the rock and shot-creted. A vibratory feeder delivers coal to a belt in the reclaim tunnel at the base of the bin.

Maintenance of the bin is limited to standard mechanical maintenance on the machinery at the base of the bin in the reclaim tunnel.

Reclamation of the coal bin will include backfilling and revegetation. The reclaim tunnel and bin will be backfilled with non-toxic fill. The fill will be contoured and revegetated to be compatible with the natural surroundings.

SIMPLIFIED COAL HANDLING SYSTEM DIAGRAM
DEER CREEK MINE



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ENERGY WEST MINING COMPANY	
DEER CREEK MINE SIMPLIFIED COAL HANDLING SYSTEM DIAGRAM	
DRAWN BY: K. LARSEN	R645-301-500E
SCALE: NONE	DRAWING #:
DATE: NOVEMBER 19, 2001	SHEET 1 OF 1 REV

Transfer Tower - The transfer tower is a steel frame structure supporting two coal transfer chutes. Coal collected from the bin in the reclaim tunnel passes through the transfer tower to the breaker station. Coal is also received from the breaker station and passed through the transfer to the crusher station.

The transfer tower requires only standard structural and mechanical maintenance. Mechanical parts are greased, repaired, and replaced as needed. The steel framing will be painted periodically to maintain its appearance and structural integrity. At the end of its useful life, the transfer tower will be dismantled and sold for scrap. The concrete foundations will be broken up and used for coarse backfill.

Breaker Station - The breaker station is a steel frame structure supporting, in general, a tramp iron magnet, 9' x 21' rotary breaker, and picking table. The 16" x 0" ROM coal is carried past the tramp iron magnet into the rotary breaker where it is broken and screened to -1 5/8" or rejected to the picking table. Unbroken coal is returned to the circuit for further crushing. Rock and trash are rejected for disposal.

The breaker station requires standard mechanical and structural maintenance. Mechanical parts are greased, repaired, and replaced as needed. The steel framing and housing will be painted periodically to maintain their appearance.

The breaker station will be dismantled and sold for scrap at the end of its useful life. Foundations for the breaker station will be broken up and used for coarse backfill.

Crusher Station - The crusher station is a steel frame structure supporting, in general, a tramp iron magnet, vibrating screen, roll crusher, and tipple control building. The coal received from the breaker station through the transfer tower passes by a tramp iron magnet to a screen where the -1 5/8" product is removed. The oversize passes through the roll crusher where it is crushed to - 1 5/8". The -1 5/8" product collected at the base of the crusher station is the final facility product. The tipple control building is approximately 15' x 15' square with concrete floor and corrugated galvanized steel sheet siding. The building interior is lined with styrofoam for

insulation against climate and noise. Tipple controls for belts, breaker, screen and crusher are housed in this building.

As with other coal handling facilities, standard mechanical maintenance is practiced on the crusher station. Mechanical parts are greased, repaired and replaced as needed. Steel framing will be painted as needed to preserve structural appearance.

In accordance with the reclamation plan, the crusher station will be dismantled and sold for scrap. Structure foundations will be broken up and used for coarse backfill.

Weigh Bin - Generally, crushed coal from the crusher station is conveyed directly to Huntington Power Plant. Two other options in the handling process are available: 1) coal may be weighed before conveying or 2) coal may be diverted to the truck loadout for truck transport.

The weigh bin building is a steel frame structure with corrugated galvanized steel sheet for roof and siding. The cone shaped bin is welded steel sheet with a maximum capacity of 200 tons. The weigh bin requires no maintenance. The weigh bin building may require painting to maintain its appearance.

During reclamation the weigh bin structure will be dismantled and sold for scrap. Building foundations will be broken up and used for coarse backfill.

Truck Loadout - The truck loadout is maintained to provide haulage when the overland conveyor is undergoing major repair. The steel frame structure supports a surge bin with clamshell loadout gates. Standard mechanical maintenance is performed on the truck loadout when needed.

The truck loadout will be dismantled and sold for scrap during reclamation. Concrete foundations will be broken up and used for coarse backfill.

Facility Conveyors - All facility conveyors are identical and discussed in Transportation Facilities.

Waste Rock and Non-Coal Waste Disposal

Underground development waste rock will be generated throughout the life of Deer Creek Mine. Typical sources of waste rock are rock slope construction, scours, and entry rehabilitation. Rock that cannot be gobbed underground will be transported from the mine and temporarily stored on the upper storage pad and then placed in a controlled manner within the permit area. Temporary storage will not exceed thirty (30) days. Details of underground development waste rock disposal plans are included in Underground Development Waste.

Deer Creek run-of-mine product includes rock from roof, floor or in-seam rock splits. Standard coal mining practice cannot fully eliminate extraneous rock in the run-of-mine product. Therefore, coal handling and sizing processes at Deer Creek Mine are designed to screen and remove the +6" pieces of rock.

Analysis of samples taken from roof and floor of the Deer Creek Mine area have shown the rock to be non-toxic and non-acid forming. Non-toxic waste rock is disposed of in a controlled manner with underground development waste. Disposal plan details are included in Underground Development Waste.

Non-coal waste is removed from the mine to a concrete trash storage bin in the mine yard. Trash is collected periodically from the bin and trucked to a State approved disposal area. A trash bunker, located at the breaker station, is used for the temporary storage of non-coal waste. The accumulated trash is hauled to the trash storage bin as needed for disposal. The trash bin and bunker requires no maintenance.

During reclamation, the trash bin and bunker will be demolished and concrete will be used for coarse backfill.

Other Mine Facilities

Office-Bathhouse - Mine offices and bathhouse facilities are housed in a 170' x 70' two story, pre-fab concrete building in Deer Creek Canyon. The concrete foundation is anchored to steel

"H"-beam pilings. Interior construction is standard with concrete floors, aluminum siding, and sheet-rock walls.

Offices for administrative, clerical, safety and engineering personnel are included in this building with conference rooms and bathroom facilities. Locker rooms, showers, bathrooms, and lamp room for 550 miners and supervisors occupy the bulk of the building.

Standard building maintenance procedures are followed to maintain the office-bathhouse.

Reclamation plans include demolition of the office-bathhouse following interior salvage and stripping. Concrete floors, walls, and foundation will be utilized for coarse backfill.

Warehouse-Shop - The 140' x 80' warehouse-shop is a steel frame structure with concrete floors and aluminum siding and roofing. Roughly, one third of the building is utilized for storage of small parts and machinery requiring cover and security. The remaining two thirds of the building is utilized as a shop for small machinery repair and minor overhauls to locomotives, belt drives, etc. Standard building maintenance is applied to the warehouse-shop. The exterior will be painted periodically to maintain its appearance.

During reclamation, the warehouse-shop will be dismantled. Steel parts will be salvaged or sold for scrap. Concrete footings and floors will be broken up and used for coarse backfill.

Material Storage Area - Mine support materials and equipment are sorted in graveled or concrete surface areas on the embankment fill in Deer Creek Canyon. Primary material storage surrounds the warehouse-shop and includes a storage shed, oil storage, fuel facilities and storage docks. A secondary storage area is located near the edge of the fill beyond the substation and parking lot and includes storage docks and bulk rock dust tank. Materials stored in open areas include crib blocks, roof bolts, conveyor hardware, belts, beams, etc.

Adjacent to the warehouse-shop is a 50' x 80' steel frame storage shed formerly utilized as a bathhouse. Storage shed construction is identical to the warehouse-shop. The storage shed

provides shelter for bagged rockdust and ready-mix concrete. No maintenance is needed to this building. Removal of the storage shed will be similar to the warehouse-shop.

Oil storage and fueling facilities are located northeast of the warehouse-shop. Cans of oil and lubricant are housed in a steel storage shed. Diesel fuel is stored in a 4,000 gallon above ground tank and accessed with an electric pump.

A 140 ton capacity steel rock dust bin is located northeast section of the graveled storage area, northeast of the parking lot. The bin is mounted on a concrete foundation. Rock dust is pumped into specially equipped cars for distribution in the mine.

A Salt Storage Shed (45'x24') is located east of the rock dust silo. The shed is covered and stores de-icing materials for winter road maintenance.

Material and equipment storage in the Elk Canyon area will consist of items related to the nearby tipple, surrounding building and facilities. The area designated will follow the access road and includes the area into the headwall of the drainage systems in that canyon.

Equipment and material storage for mine related items will be placed along the run of Mine Belt, South of the belt and next to the drainage system, but not within the drainage.

A material storage area is located along the embankment at the C1/C2 Belt Transfer. Material storage areas are cleared of snow and debris as needed to maintain accessibility. Drains are inspected and cleaned periodically to ensure proper drainage. Grading and resurfacing of graveled areas will be performed as needed.

Stockpiled materials, storage sheds, fueling facilities, and the rock dust bin will be removed from the area and scrapped or salvaged during reclamation. Specific reclamation procedures for the embankment fill supporting the materials storage areas are outlined in Reclamation Plan.

Parking Lots - Two general parking areas exist at Deer Creek Mine. Construction consists of an average 10" road base with 4" of asphalt surface. One small lot is located just outside the office-bathhouse with spaces designated for 18 vehicles. The main parking lot in the mine yard has 110 designated parking spaces. In addition a 120' x 70' parking garage is adjacent to the belt. This steel frame structure has a concrete floor and aluminum siding and roofing.

Parking lots are cleared of snow and debris and resurfaced as needed. When snow removal from the mine site is necessary due to heavy snowfall and accumulation, it will be transported and stored at the Waste Rock Site in a controlled manner so that it will drain into the sediment basin. If a potential discharge exists the Division will be notified by the fastest available means and action will be taken to avoid a discharge or receive permission for the discharge from the Division of Water Pollution Control. Records of the amount of snow removed and stockpiled will be maintained and made available upon request.

Drains are inspected and cleaned periodically to ensure proper drainage.

During reclamation, the parking garage will be dismantled. Steel parts will be salvaged or sold for scrap. Concrete floors, etc. will be broken up and used for course backfill. Asphalt of the parking lots will be broken up and used as coarse backfill during reclamation.

Mine Ventilation Fans - Deer Creek Mine is ventilated through a 150' long, 20' diameter, vertical shaft. A Joy Series 1000 Axivane Fan is anchored to a concrete foundation set in a cut-and -fill embankment. Mine exhaust is drawn through steel ducting and exhausted through an evase'. The fan motor is housed in a steel frame building.

Under normal operation, the fan is driven by a 1,000 hp electric motor as the prime mover. Through a clutch arrangement, a Model D346 Caterpillar diesel engine is installed to provide back up for the electric motor. The electric motor and the diesel engine are installed in a motor house, separated from the mine ventilation fan and duct by a long shaft-type coupling.

Fuel for the diesel engine is stored in a 500 gallon capacity horizontal fuel tank located on a cut-and-fill embankment behind the fan at a slightly higher elevation. A buried 3/4" line supplies fuel to the engine.

The mine fan is inspected daily and greased as needed. The fan motor house and evase' will be painted periodically to maintain their appearance.

At the end of mine life the fan installation will be dismantled and salvaged. The ventilation shaft will be sealed. Concrete foundations will be broken up and used for landfill.

Power Supply and Substation - Power is supplied to Deer Creek Mine via a 12.5 KV utility service line which roughly parallels the northwest side of the access road up Deer Creek Canyon. The substation, located northwest of the shop and warehouse facility, supplies eight different 12,470 volt lines to the mine and three 480 volt lines for shop and surface power.

Deer Creek Mine power supply system was installed and is maintained by Rocky Mountain Power.

The power supply system will be removed by Rocky Mountain Power. Gravel and foundation material from the main substation will be used for backfill.

Equipment Storage Area

The sediment basin used during pond cleanings is used to store mobile equipment when not functioning as a sediment basin.

Eight Inch Underground Water Supply Line and Storage Tank

To insure an independent and reliable external water supply to the mine, an 8-inch stainless steel waterline was installed. The line supplies water from the Huntington Power Plant makeup water reservoir to the 100,000 gallon storage tank located east of the office/bathhouse. The buried line generally follows the conveyor maintenance road up the canyon. Details of line location can be found in Packet 5-1.

Operation and maintenance of the line is minimal, as the line is buried. The storage tank will require routine maintenance and periodic painting.

Reclamation of the water line and storage tank is discussed in Part 4 - Reclamation Plan.

MINE FACILITIES – LEFT FORK RILDA CANYON

Introduction

The Deer Creek Mine Rilda Canyon Facilities are located in the Left Fork of Rilda Canyon, a tributary of Huntington Canyon. The facilities pad and access road occupy approximately 2.01 acres of Manti-LaSal National Forest land in the NW¼NW¼SE¼ of Section 29, Township 16 South, Range 7 East, SLM. The facilities include an access road and a pad area which supports two (2) portals, a substation, powerline, fan, water storage tank and pumphouse.

Vehicular access to the road is controlled by a locked barrier gate near the public turnaround area. However, the road continues to serve as a Forest Development Trail, allowing access by horseback and foot travel up the Left Fork and beyond the facility area. Access to the facility pad is controlled with fencing and a locked gate at the point where the road enters the pad. The existing trail continues beyond this point.

Vehicular use of the road will only occur in emergency situations, for environmental maintenance, and delivery of solid, bulk materials. Access for routing equipment inspection and maintenance will be from underground. Surface environmental compliance inspections will be conducted on foot from the turnaround area (refer to Volume 11, R645-301-500 Engineering Section for additional information and road use stipulations).

Specific locations and other information regarding the access road and facility pad are shown on drawings; 2-15A, 2-17A, 3-9A, 3-9B, 4-1A and 4-4A Sheets 1 and 2. Further discussion of the access road and facility follows:

Access Road - The Rilda Canyon Facility Access Road is approximately 1,150 feet in length. It follows the north side of the Left Fork of Rilda Canyon from the end of the county road to the facility pad. The existing road/trail was upgraded to a gravel surfaced road with an average travel width of 11 feet an average grade of approximately 8%. The road was designed in accordance with recommendations from the surface management agency (Manti-LaSal National Forest).

Drainage control is provided by a ditch along the north side of the road. The ditch is armored with type L, D50 = 9" riprap at stations 3=36 to 6+55, 7+69 to 9+89 and 11+82 to 13+96 to comply with DOGM and Forest Service Stipulations (refer to Map 3-9B). Additionally, Map 3-9B, certified 8/31/95, illustrates the typical rip rapped ditch installation. Flows in the ditch are controlled by rip rap and 18" diameter CMP culverts which carry the flows beneath the road and into the natural drainage system. Further information regarding drainage controls along the access road is found in Volume 3: Appendix VII, Surface Runoff Control Plan, prepared by Hansen, Allen & Luce.

The road and culverts will be removed during final reclamation of the site and the Forest Development Trail will be re-established.

Topsoil Pile - Prior to surface facility construction, approximately 3,740 cubic yards of topsoil material were removed from the construction sites and placed in a storage area within the permit area, adjacent to the access road (refer to Map 2-17A). Prior to topsoil removal, vegetation was removed as directed by the surface management agency. Only major vegetation types were removed. Topsoil was stripped to the depths indicated on Map 2-17A, using conventional earth moving equipment. Removal depths were based on the soil survey information. Removal depths were confirmed in the field by visual observations of the soil material and standard survey practices. The topsoil pile was revegetated for erosion control, with the interim seed mixture and methods found in Part 4, and silt fence was placed along the entire toe of the pile to provide sediment control.

The topsoil will be redistributed during final reclamation.

Power Line - A 25KV power line provides electrical power to the substation at the facility pad. The power line was installed by a contractor in accordance with a Forest Service Special Use Permit issued to Utah Power (now known as Rocky Mountain Power). Refer to Map 3-9A. The poles and cross-member structures are consistent with the current raptor protection design criteria.

The power line will be removed, in accordance with the above referenced permit, at the time of final reclamation of the pad and road.

Facility Pad - The Rilda Canyon Facility Pad is an earthen fill structure utilized to support the fan, substation, water tank and pumphouse. The pad occupies approximately 1.02 acres. Approximately 9,000 cubic yards of material for the pad and road fill were purchased from a local contractor and hauled to the site. The fill material is held in-place by a "Hilfiker"-type retaining wall system. This type of system provides structural support with greatly reduced visual impacts.

The pad is gravel surfaced. All precipitation intercepted by the pad will be retained on the pad and routed into the mine (refer to Volume 3, Appendix VII: Surface Runoff Control Plan).

During final reclamation, approximately 11,280 cubic yards of the pad and road fill will be used for recontouring the pad area and the access road (refer to Map 4-4A). R645-301-412.300 provides for using excess spoil in final fills, with the conditions that the fills are suitable for reclamation and revegetation and compatible with the natural surroundings and the approved post mining land use. The proposed final fills for the pad and road reclamation meet these criteria. The final fills will be constructed in accordance with R645-301-553.220 through 553.240 and applicable Rules at R645-301-745. Mass balance calculations are found in Part 4. The remaining material, approximately 3,010 cubic yards, will be hauled to the Deer Creek Waste Rock Site by the reclamation contractor for disposal.

Fan - The fan installation at the Rilda Canyon Facility is a dual, parallel fan arrangement (refer to Map 3-9A). The fans are located side-by-side on concrete foundations. The exhaust evases are directed upward to reduce environmental impacts. Only one fan will operate at a time. The main fan is driven by an electrical motor and the back-up fan is powered by a diesel motor. The motors are housed in steel frame buildings. The fan housing structure and buildings were painted as directed by the Manti-LaSal personnel, to be compatible with the surrounding area. Fuel for the back-up fan is stored in an above ground storage containment system inside a bermed area near the fan.

Substation - The substation occupies approximately 6,000 square feet of the facility pad (refer to Map 3-9A). Power is provided from the substation to underground operations and to the fan and pumphouse on the surface. Substation components were painted to blend with the surrounding area.

During final reclamation, the substation will be dismantled and salvaged.

Water Tank and Pumphouse - A 100,000 gallon steel water storage tank is located on the facility pad to provide fire protection. A steel frame pumphouse is located adjacent to the storage tank. Both the pumphouse and water tank were painted as described above. Water is drawn from the mine and stored in the tank to provide required fire protection capabilities. Electrical power is provided from the substation.

Portals - Two (2) portals ventilation functions and access from the mine to the facility pad for routine inspections and maintenance. Concrete portal liners and headwalls provide support for the portals at the outcrop.

During final reclamation, the portals will be sealed as depicted in Part 4 of the MRP. The portal liners and headwalls will be broken up and hauled to the Deer Creek Waste Rock Site.

Surface Drainage Control - Surface drainage controls for the affected areas, access road and pad, are detailed in Volume 3 Appendix VII. Undisturbed surface drainage will bypass the facilities via two (2) CMP culverts as described in the Surface Control Plan found in Appendix VII.

During final reclamation, the culverts will be removed and salvaged and reclaimed channels will be established as described in the Surface Runoff Control Plan.

As discussed previously and in Appendix VII, all precipitation intercepted by the facility pad will be routed into the mine through a 3' x 4' drop inlet box with a 6" drain line to the mine portal located in front of the diesel backup building and a 12" PVC pipe located along the east side of the fan portal. A small settling basin was constructed at the culvert inlet. The culvert will discharge into a sump within the mine. The sump will provide a hydraulic barrier against the air pressure differential created by the exhaust fan. If necessary, the water level in the hydraulic barrier sump can be maintained with water supplied from the in-mine dewatering/water supply system. This proposal was reviewed and approved by MSHA (communication between former Randy Tatton, Manager Health, Safety and Training, Energy West and former Ted Farmer, MSHA Field Office Supervisor, Orangeville, Utah, June 7, 1995).

The quantity of water entering the mine as a result of a 10 year/6 hour design storm is 0.07 acre feet. The water will enter the in-mine water collection system and ultimately be discharged into the Huntington Creek drainage system via the Deer Creek belt portal in accordance with UPDES Permit No. UT-0023604-002.

The average annual discharge from the Deer Creek Mine for the past ten (10) years (1985-1994) was 1893 acre feet. The 0.07 acre feet which will enter the mine from the Facility Pad equals 0.004% of the average annual discharge. It is unlikely that diverting this quantity of water into the mine will result in a disturbance to the hydrologic balance on, or off, the permit area.

Estimating, using the Universal Soil Loss Equation, indicate that an estimated sediment loading of 55 cubic feet per year is possible from the pad (refer to HA&L report in Appendix VII). If this quantity of suspended material directly entered the mine dewatering system, the potential

increase in suspended solids would equal approximately 1 part in 1.5 million. The potential for the pad drainage to affect the pH of mine discharge is equally remote. Therefore, diverting the pad runoff into the mine will not result in a failure to meet the effluent limits of pH and total suspended solids established for the UPDES permit at the Deer Creek Mine.

Stream Channel Alteration Permit Number 94-93-095A was issued for the Rilda Canyon Facilities (refer to Exhibit A). This permit constitutes compliance with state and federal water quality standards. All work was completed in accordance with the conditions in said permit.

Geotechnical Investigation - A geotechnical investigation for preliminary design of the Rilda Canyon Facilities was completed by RB&G Engineering Inc. in 1991 (refer to Exhibit B). This investigation was for Roberts & Schaefer, an engineering firm retained to design facilities; the concept of which, as depicted in (refer to Exhibit B), was much more extensive than the final design. Therefore, the geotechnical report covers a greater area than is pertinent to the final design.

Included in (refer to Exhibit B), are the portions of the report that address the geotechnical investigations applicable to the final design of the Rilda Canyon Facility. The investigation was only preliminary because of limited access at the time of the study. However, preliminary design recommendations regarding cut slopes are presented in the report (refer to Exhibit B). The proposed facilities have been designed in accordance with the most conservative recommendation, which should result in a stability safety factor of a least 1.3. As stated in the report, additional information was required for final design. This information was obtained through drilling immediately upon accessing the area. Slope stability analysis, based upon known parameters, was then performed on the proposed slopes. Final slope configurations were designed to the minimum 1.3 safety factor.

Riparian Habitat Improvement - Riparian habitat improvement mitigation was accomplished through installation, by the applicant, of a fence (NEWUSSD Special Use Permit fence) and cattleguard at a location adjacent to the eastern fence line of the NEWUSSD spring area. This mitigation was negotiated between Manti-LaSal, UDWR, livestock grazing permittees and water

rights owner representatives. An agreement, signed November 21, 1994 by Lee Lemon, Huntington-Cattlemen's Association; Duane K. Jensen, Huntington-Cleveland Irrigation Company, and Darwin R. Jensen, Manti-LaSal National Forest identifies this mitigation measure. This agreement also contains comments regarding water replacement. The Deer Creek MPR, Volume 9, contains the subject water replacement language.

R645-301-526.300

WATER POLLUTION CONTROL FACILITIES

Drainage Systems

Two separate drainage systems are provided at the Deer Creek Mine site and are classified as "undisturbed" and "disturbed" collection systems. The "undisturbed" system collects uncontaminated water above the portal site and from side slopes adjacent to the site and conveys it past the disturbed area into the natural channel of Deer Creek. These systems are illustrated in Packet 3-9.

Undisturbed runoff is collected by concrete inlet boxes in Elk Canyon and Deer Creek Canyon and conveyed through a corrugated steel pipe system past the sediment pond. Undisturbed runoff is discharged into the natural Deer Creek drainage. The system is designated to adequately pass peak flow from the 50 yr./24 hr. precipitation event.

Runoff from those areas below Elk Canyon includes the south facing slopes above the C2 Beltline. Runoff from the slopes is collected in a ditch and conveyed through corrugated steel pipes under the disturbed area of the beltline and beltline access road. The undisturbed runoff is discharged into the natural Deer Creek drainage system. A complete illustration of the disturbed and undisturbed drainage control is found in Map Packet 3-9.

The "disturbed" collection system collects runoff from roads, parking lots, storage areas, portal area and terraced area conveying it to the sedimentation pond. This system consists of concrete catch basins, small-diameter CSP culvert and open ditches designed to adequately collect and

pass peak flow from a 10 yr./24 hr. precipitation event. (See Appendix IX last part for disturbed drainage calculations and Appendix III for safety factor calculation.)

Maintenance on the above drainage system consists of annual inspection and cleaning of all culverts, inlets and ditches. Trash and debris are removed and the system is checked for damage which might require repair to ensure proper operation of the system.

During mine-site reclamation, all diversions will be removed and the streambed re-established and riprapped to prevent erosion. Details are included in Reclamation Plan.

The construction, maintenance, and removal of the sediment pond is discussed previously in this description.

Mine Water Discharge - Mine waste water is collected in an underground sump and discharged into a concrete weir adjacent to the main mine portal. Approximately 20,000 gallons of water per day are collected and treated for use as potable water. Excess mine water is conveyed through 15" plastic (PVC) water line to the Huntington Power Plant water system and/or to the undisturbed drainage system through a buried 18" plastic (PVC) water line from the mine water discharge building to the undisturbed drainage culvert located 330' east of the office/bathhouse.

The water treatment system is installed in a concrete block building behind the office-bathhouse. Up to 35 gpm may be treated. The system is approved by Utah State Department of Health. Treated water is pumped to a 25,000 gallon redwood storage tank near the mine ventilation fan. The water treatment system is maintained to be operational at all times and to adequately treat water within the Utah State drinking water standards.

During reclamation, the mine waste water disposal and treatment system will be dismantled, extracted and sold for salvage. Concrete block and floor from the treatment building will be broken up and used for backfill.

Sewage System - Office-Bathhouse and Warehouse-Shop sewage is collected in two (5,000 and 9,335 gallon) precast concrete septic tanks located in the mine yard. The septic tanks are connected in series. Effluent from these tanks is carried by 6-inch diameter pipeline to an absorption field located adjacent to the overland conveyor approximately 5,800 feet northeast of the septic tank.

The sewer treatment provided fulfills local, state and county health codes. Approval of the treatment process has been given by the Utah State Department of Health (see Map Packet 3-11 for details). Drawing number DS1704B, dated September 29, 1997, submitted as part of packet 3-11, reflects the revised locations of the seepage pits off the main 6" line from the mine. The sewer treatment facilities will be left in place to dry out and the septic tanks will be crushed and backfilled.

Alternative Sediment Control Areas

Disturbed areas which cannot be reasonably treated by a siltation structure (i.e., sediment pond) due to remote geographic locations and small areas not justifying a sediment pond but which cannot meet effluent limitations without treatment are considered Alternative Sediment Control Areas (ASCA). These areas are treated by the best control technology available which includes, but is not limited to: silt fences, berms, catch basins, strawbales, gravel filter dikes, check dams, sediment traps and mulches. A list of the ASCA's within the permit area is found in R645-301-500: Table 4.

R645-301-500, TABLE 4
DEER CREEK MINE
Alternative Sediment Control Areas

Site Location	*Sediment Control*	*Acreage*	*Drawing #*
Meetinghouse Canyon	Berm	0.02 Total (2) 20 x 21' areas	Map 1-3 CM-10367-DR
Sediment Pond & C1 Conveyor (ASCA #1)	Sediment Trap, Berm, Water Bar	1.03	Map 3-9 DS1899D
Powder Magazine (ASCA #2)	Sediment Trap	0.51	Map 3-9 DS1899D
C1/C2 Transfer Area (ASCA #3)	Sediment Trap, Berm	3.22	Map 3-9 DS1899D
Road Shoulder/C2 Conveyor (ASCA #4)	Silt Fence, Sediment Trap, Water Bar	1.63	Map 3-9 DS1899D
Drainfield (ASCA #5)	Silt Fence, Sediment Trap	1.13	Map 3-9 DS1899D
C2 Conveyor (#6, #7)	Silt Fence, Sediment Trap, Berms	4.28 Total (2.35, 1.93)	Map 3-9 DS1899D
Elk Canyon Coal Storage Pad Outslope	Silt Fence	0.02	Map 3-9 DS1899D
Rilda Canyon (BTCA Area #1)	Straw Bales, Silt Fence	1.02	Appendix VII HA&I Report Sheet 2 of 3
Rilda Canyon Access Road (BTCA Area #2)	Straw Bales, Silt Fence	0.99	Appendix VII HA&I Report Sheet 2 of 3
TOTAL ACREAGE	**13.85**		

Diversions

Deer Creek Mine operation will not require further diversion of any stream channel in the permit area until reclamation. Specific procedures for diversion during reclamation are described in the Reclamation Section. Existing runoff and stream channel diversions are described in Operation Plan.

R645-301-527

TRANSPORTATION FACILITIES

Deer Creek Mine operation utilizes roads and conveyors, in association with facilities described in Operation Plan. All portal facilities are shown on Map 3-9. A description of the construction, maintenance, and removal of each transportation facility at Deer Creek Portal follows.

Roads

Safety factor calculations for all roads are located in Appendix III.

R645-301-527.120

Primary Roads

The access road from the end of the county road to the parking lot is designated as a Primary road. It is an extension of an Emery County road which runs approximately three miles from State Highway 31 in Huntington Canyon to the mine security gate. Detailed plans of the access road are unavailable due to its age. A general road plan is shown on drawing 3-18 and 3-19.

Road width averages 20'. Road gradient averages approximately 8% until it nears the facilities area. A 1,000' length of road from the truck loadout to the parking lot has a gradient of 18%. Steep narrow canyon terrain allows no leeway for a more gradual gradient. Asphalt and road base thicknesses are variable due again to road age and periodic resurfacing. Asphalt thicknesses are at least 4". The mine access road is crowned in the center, gradually sloping to the sides.

Runoff from the access road between the mine gate and the truck bin area is collected in open ditches which drain into Deer Creek. From the truck bin area to the parking lot, runoff is collected in open ditches, slotted drains, and catch basins and routed through the sediment pond. Diversions are discussed in Operation Plan. Road drainages along the county road beyond the mine gate are maintained by Emery County Road Department.

The county road was constructed and is maintained by the County and will remain in place between the mine gate and State Highway 31, following final reclamation, to provide access to the forest and fee lands.

R645-301-527.110

Ancillary Roads

All roads which are not designated as Primary roads are considered Ancillary roads. The Ancillary roads include:

1. Elk Canyon Access Road
2. Fan Access Road
3. Sediment Pond Access Road
4. C1 Conveyor Access Road
5. C1-C2 Conveyor Transfer Access Road
6. C2 Conveyor Access Road
7. Waste Rock Access Road
8. Rilda Canyon Facilty Access Road

The coal facilities access road is a 1,000' long winding gravel road up Elk Canyon which provides access to major components of the coal handling circuit. It has variable width and grade. It is utilized daily at low speeds by coal handling facilities labor and service personnel. Road construction was limited mainly to shallow blade work in the existing canyon soils. Runoff from this road is collected in open ditches, sediment traps and inlets and carried to the sediment pond.

The mine fan access road is a 1,500' long gravel road winding up Deer Creek Canyon from behind the office-bathhouse to the mine ventilation fan. Road gradient averages approximately

20%. Travel on this road is limited and infrequent. Road width averages 12'. Drainage from the mine fan access road is collected in an open ditch in the "disturbed" drainage system.

The sediment pond access road, C1 conveyor access road, C1-C2 conveyor access road and C2 conveyor access road are dirt surfaced and used by mine personnel infrequently to monitor and maintain the facilities.

The Waste Rock Access Road is dirt and gravel surfaced and used on an infrequent basis by mine personnel for hauling waste rock and maintenance and monitoring of the Waste Rock Site. Road width averages 24' with a variable grade from 0% to 8%. (See Volume 10 for additional information, profile and cross-sections.)

The Rilda Canyon Facility Access Road is approximately 1,150 feet in length. It follows the Left Fork of Rilda Canyon from the end of a county road to the facility pad. The road is gravel surfaced with an average travel width of 11 feet and average grade of approximately 8% (see Drawing CE-10890, Map 3-9B). A guardrail is located along the outside edge of the travel surface. The guardrail is made of Contin steel, as directed by the Manti-La Sal, to be compatible with the surrounding area.

Vehicular access is controlled by a locked barrier gate near the public turnaround area. However, the road continues to serve as a Forest Development Trail allowing access by horseback or foot travel up the Left Fork beyond the facility area. Unauthorized access to the facility pad is controlled with fencing and a locked gate where the road enters the pad. The existing trail continues beyond this point.

Vehicular use of the road will occur in emergency situations, for environmental maintenance, and delivery of solid, bulk materials. Access for routine equipment inspection and maintenance will be from underground. Surface environmental compliance inspections will be conducted on foot from the turnaround area (for additional information see Volume 11, R645-301-500 Engineering Section).

Maintenance of all facility roads includes snow and debris removal, grading and resurfacing as needed.

Removal of all facility roads is discussed in the Reclamation Plan portion of the PAP.

Conveyors

Six facility conveyors are utilized at Deer Creek Mine. They are identified as follows:

a. Run-of-Mine Conveyor
b. Surge Bin Reclaim Conveyor
c. Breaker Feed Conveyor
d. Breaker Reclaim Conveyor
e. Crusher Feed Conveyor
f. Overland Conveyor

Two alternate conveyors are available for use if needed. They are Weigh Bin Conveyor and Truck Loadout Conveyor.

All facility conveyors are 48" wide. All conveyors are covered to prevent wind erosion except the truck loadout conveyor which is seldom used. All conveyors are steel frame idler supported conveyors except the overland conveyor which is steel frame cable supported conveyor.

The 1,350' run-of-mine conveyor delivers 16" x 0" size coal to the coal surge bin from the mine. This conveyor will deliver as much as 2,500 tph.

The surge bin reclaim conveyor is approximately 150' long and delivers a maximum 1,500 tph to the transfer tower for passage to the breaker feed belt.

The 60' long breaker feed belt delivers a maximum 1,500 tph to the breaker station.

The 100' long breaker reclaim belt delivers a maximum 1,500 tph -1 5/8" and breaker reject size coal to the transfer tower for passage to the crusher feed conveyor.

The crusher feed conveyor is approximately 70' long and delivers up to 1,500 tph to the crusher station.

Final -1 5/8" coal product from the crusher station is generally delivered to the overland conveyor which carries it directly to Huntington Power Plant. The 1.8 mile long overland conveyor can deliver up to 1,200 tph. It is constructed in two long sections, one 3,000' and the other 6,400'.

If major repairs are necessary on the overland conveyor, coal may be routed to the weigh bin conveyor and onto the truck load-out conveyor to facilitate truck haulage to Huntington Power Plant.

If weighing of the plant product is desired, coal may be delivered to a 200 ton capacity coal weigh bin via the weigh bin conveyor.

Standard mechanical maintenance procedures are followed to ensure smooth operation and long life of the facility conveyors.

During reclamation, the conveyors will be dismantled and sold for salvage. Concrete foundations will be broken out and used for coarse backfill.

R645-301-528.321

RETURN OF COAL PROCESSING WASTES TO UNDERGROUND

No plans exist to return coal processing wastes to the underground at Deer Creek Mine.

R645-301-524

BLASTING PLAN

Explosive storage and handling facilities are shown on Map 3-8. Blasting plan is located in Appendix VI.

R645-301-420

AIR POLLUTION CONTROL PLAN

In Accordance with R645-301-244, air pollution control measures have been applied and will be applied throughout the life and subsequent reclamation of the Deer Creek Mine site.

The main service road and parking lots are asphalt surfaced. Service roads to the mine fan and coal handling facilities are gravel surfaced. Vehicular traffic on these roads in controlled to minimize contribution of fugitive dust. Vehicle speeds on the main service road are restricted to 35 mph; speed limit signs are posted. Travel on the mine fan service road is limited to once a day at low speed. The service road for the coal handling facilities is used daily at low speeds for access by service and labor personnel. The steep natural terrain restricts unauthorized travel on other than established roads.

All areas adjacent to roads or travelways have been planted for revegetation. Reseeding is repeated until vegetation is adequately established. Revegetation is applied on all disturbed surfaced and regraded areas as soon as season and weather permit.

Fugitive dust control procedures are implemented throughout the coal handling process. All commonly utilized belt conveyors are covered and equipped with belt scrapers to prevent coal dust generation. Transfer points are enclosed and chute inlets and outlets are rubber curtained to minimize open areas.

The high moisture content of the coal at Deer Creek Mine provides fugitive dust control throughout the coal handling process. Analysis of samples taken during processing show an average 7.5% inherent and surface moisture content in 248 samples. Table 5 is a copy of the sample analysis data. Coal dust generation is reduced throughout the handling process by the dampening effect of this moisture.

R645-301-500: TABLE 5 Deer Creek Mine Coal Analysis Time Period: Year Ending 1980					
Parameter (as rec'd)	**# of Samples**	**Mean**	**St. Deviation**	**Minimum**	**Maximum**
% Moisture	248	7.54	1.69	4.63	17.85
% Ash	248	12.75	2.60	7.72	23.31
% Volatile Matter	248	40.76	1.37	34.86	42.85
% Fixed Carbon	248	39.66	1.98	34.4	44.92
BTU/LB	248	11,561	502	10,101	12,643
% Sulfur	248	0.43	0.04	0.34	0.55

The captive nature of the Deer Creek Mine product eliminates the possibility of spontaneous combustion conditions developing. Long term stockpiling within the permit area is unlikely.

R645-301-521.180

OFFSITE SUPPORT FACILITIES

The only offsite support facility is the Deer Creek Waste Rock Storage Facility located northeast of the mine site, near State Highway 31. See Volume 10 for more details of this facility.

IN SITU PROCESSING

There are no in situ processing activities or plans for such activities associated with Deer Creek Mine.

R645-301-526.110

OPERATION PLAN EXISTING STRUCTURES

For the sake of organization and simplicity, Energy West has listed the various existing structures by grouping of association. Group I (Hydrological Association) - This group will list those facilities such as underground diversions, surface drainage systems and sedimentation ponds. Group II shall list and incorporate all surface structural facilities, buildings, conveyors, power lines, storage tanks, etc., and all facilities related with operations as they pertain to coal

processing. Group III lists only earthen structures, i.e., fills, embankments, roads and earthen berms.

Group I (Hydrological Association)

Diversion System

Deer Creek Mine is located in a narrow canyon known as Deer Creek. The mine surface facilities are situated at the junction of Deer Creek and two small side canyons, Deer Canyon and Elk Canyon. All three drainages are ephemeral in nature.

To meet the initial regulations (effective December 13, 1977) Company planned and constructed with approval from the regulatory authority, an underground diversion system (see Map 3-9). Each drainage was diverted using corrugated metal pipe sized to meet a 50 year/24 hour event. Hydrological and engineering calculations are included in the appendix.

The principal drainage is Deer Creek and is carried by a nominal 8-foot diameter CMP culvert from a point about 800 feet southeast of the mine portal to discharge into the Deer Creek channel about 600 feet northeast of the weigh bin structure; as distance of about 2800 feet with a vertical drop of about 420 feet.

An 18" buried pipeline is located from the mine portal to the Deer Creek undisturbed drainage culvert located 330' east of the office/bathhouse for the purpose of discharging excess mine water into Deer Creek drainage.

A secondary drainage, Deer Drainage, is diverted into 36 inch and 54 inch diameter culverts in the drainage channel about 300 feet upstream from the parking lot. These culverts run about 650 feet to the Deer Creek culvert and are connected to it about 400 feet east of the change-room building.

A 30 inch culvert lies in the drainage channel of Elk Canyon Creek and diverts runoff to the Deer Creek culvert at the tipple site. Two side drainages from the south side of Elk Canyon Creek are

diverted into this feeder culvert. This 30 inch culvert is adequate to meet the criteria of a 10 year 6 hour storm event.

All diversions are protected at the intake by substantial concrete retaining walls and catch basins with trash racks. The basins are designed to prevent entry of floating debris, damming or side-wash.

To help reduce diversion maintenance at the Deer Creek tipple area, two sediment traps were constructed at the locations indicated on the Surface Yard map (Plate 3-9). This will greatly reduce the amount of sediment from this area entering diversion inlets, culverts and the sediment pond. The trap at the corner of the weigh bin will discharge into an inlet near the Weigh Bin. The 36 inch culvert will discharge into the grouted channel without entering the trap. Flow into the second trap will be directed via a drop inlet and 12 inch culvert. Discharge flow from the second trap structure will enter the 36 inch culvert via a 12-inch culvert. Map DS1159C, Plate 3-9C, is a detailed drawing of the sediment traps. The design of the traps will facilitate easy cleaning on a periodic basis. The traps will only be functional during the spring, summer and fall seasons, due to severe winter conditions. All winter runoff of these areas will still report to the sediment pond.

Additional drainage control in the tipple area includes a drop inlet structure and 12-inch diameter culvert located in the vicinity of the rotary breaker and crusher (see Packet 3-9).

In addition to the sediment trap structures, a small compressor building was built in front of the recently completed binwall extension for weather and damage protection of the compressor.

Sedimentation Pond

Approved and constructed in September 1979, this single-stage non self-dewatering containment facility was designed to meet the requirements of the regulations. Pond size is 12.51 acre feet which accommodates a 10 year/24 hour storm event plus 0.1 acre feet of sediment volume per acre of disturbed mining area.

Site specific studies, including geotechnical, hydrological and soil analysis are enclosed in the Appendices III and VII Construction drawings with details are included in the map section of this application (see Maps 3-15 and 3-16).

Monitoring of the pond for structural deterioration, settling or water seepage will be by quarterly visual inspections. Sediment and water levels will be recorded and ponds will be cleaned as necessary to maintain the 60% sediment storage levels. A certified annual inspection report of the pond's physical condition will be submitted to the Division in accordance with R645-301-514.312.

Deer Creek Mine has been issued a UPDES permit whose identification number is UT-0023604. The Deer Creek Mine has two permitted outfalls; 001 - Sediment Pond and 002- Mine Water Discharge.

The sedimentation pond does not meet the criteria of MSHA, 30 CFR 77.216 (a). As previously stated, the pond is a combination incised and embankment structure. The minimum elevation of the upstream toe of the embankment is 7217.14 feet. The crest elevation of the spillway is 7232.03 feet. Therefore, the elevation to which water can be impounded above the upstream toe of the structure is 14.89 feet.

Surface Drainage Facilities

Runoff waters from the mining areas or disturbed areas will be collected and channeled to the sediment pond.

The parking area has been fitted with drop and slotted drains to collect storm water. Ditches and some buried culverts direct this water to a main buried storm drain located parallel to the access road which has spaced drop drains along its length.

Drainage system is sized to handle a 10 year/24 hour storm event and provides best technology for sedimentation control in steep slopes such as the lower reaches of the Deer Creek access road.

For details of the surface drainage system, refer to Map 3-9.

Group II (Surface Facilities)

As previously described, applicant has listed and provided individual photographs for each separate building, conveyor and structural facility used to mine, process or transport coal (photos are included in the appendix).

Surface facilities and structures are shown on the Surface Facilities Maps 3-9 and Map 3-9A. The following table lists the major surface facility and date of construction.

Item #	Structure	Construction Date
1	Office & Bathhouse	1978
2	Warehouse, Shop, Dry Storage Area	1973-1974
3	Transfer Tower	1973-1974
4	Breaker & Trommel Screen	1979-1980
5	Crusher Building and Master Control Center	1973-1974
6	Weigh Structure & Loadout	1973-1974
7	ROM Conveyor and Overland Conveyor	1973-1974
8	Water Treatment Plant	1979
9	Sediment Pond	1979
10	Ventilation Fan & Stand-By Fan	1977-1993
11	Rock Dust Storage Tank	1975 & 1992
12	Concrete Storage Bin	1980
13	Oil Storage Bins	1980
14	Fuel Storage Area	1976, 1989
15	Power Substation	1974 & 1993
16	12.5 KV Line	1973-1974
17	Tipple Trash Bunker	1990
18	Storage Docks	1992 & 1994
19	High Pressure System & Tank	1986
20	Elk Canyon Expansion	1988
21	MSHA Pile Expansion	1985
22	Sediment Box	1993
23	Covered Parking/Staging Area	1987

All surface facilities are constructed within the permit area and are provided with hydrological protection by use of existing underground diversions, surface runoff collection system and sedimentation pond.

Applicant states that each surface facility was designed and constructed to meet both state and federal building codes. No existing structure requires modification to meet the performance standards of R645-301 of the Utah Coal Regulations.

Construction plans for each major structure (facility) are on file in applicant's office at 15 North Main, Huntington, Utah for review by the regulatory authority.

Group III (Earthen Structures)

This narrative refers to Map 3-9. In 1969 the Peabody Coal Company purchased control of both fee and federal coal leases comprising the acreage of what is now known as Deer Creek Mine. Mine development was contracted to the Castle Valley Mining Company of Huntington, Utah.

In May 1972, mine development required extensive amounts of fill material to provide a parking lot and material storage area.

The mine area, as presently constructed, was largely made from material excavated from fee land immediately south of the mine site as shown on Map 3-9 depicted as parallel terraces. Approximately 450M cubic yards was excavated.

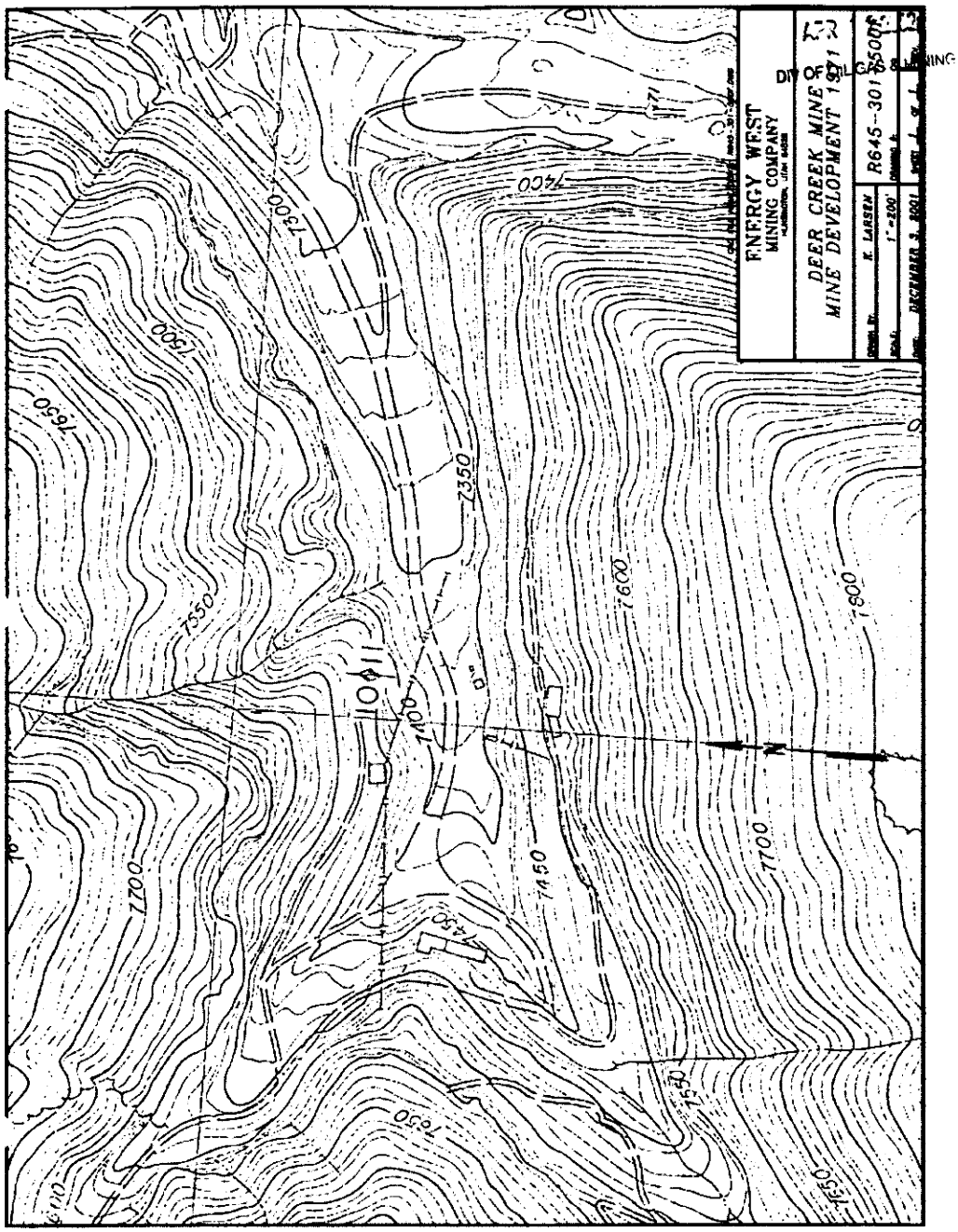
The parking lot and storage area extends from the portal of the main entry at coordinates N 373,450 E 2,109,309 in an easterly direction for 1100 feet. It occupies an area of about 8 1/2 acres at the confluence of Deer Creek and Deer Canyon Drainage (right fork of Deer Creek).

Applicant has no access to Peabody Coal Company's files to research engineering records or maps. Former employees working at Deer Creek at the time indicate cross-sections were taken (Pollack) and fill placement was constructed using standard accepted practices. Figure R645-301-500F shows the mine area prior to parking lot fill. A stability report enclosed in Appendix VIII reveals the structure to be stable.

Surface waters are diverted and collected for sediment control through the sediment pond. The excavated portion of the sediment pond, built in 1979, forms the east face of the parking lot fill. See waste rock disposal plan in the Operation Plan.

Preliminary data from a stability study of the mine area fill structure by a consultant (Rollins) indicates the fill itself is stable and meets the static safety factor of the regulations. However, the steep slope facing the access road by analysis is determined to be about 1.3 (see Appendix).

Applicant has interpreted the regulations for this type of fill as being within the stated parameters of the regulations and said structure requires no modification to meet the performance standards of R645-301 of the Utah Coal Regulations.



Major Facilities Supported on the Structure Are:

1. 150 x 90 foot warehouse-shop building
2. 55 x 85 foot warehouse building
3. 70 x 100 foot electrical substation
4. Parking lot
5. Material storage area
6. Storage bins

All these structures are supported by slabs or shallow foundations which can be readily removed by front-end loaders or bulldozers and are suitable for use as rip-rap when broken up and placed as channel lining or coarse fill beneath backfilled areas.

Bathhouse/Office Building and Structure

A 75 x 100 foot precast, two-story building constructed in 1978 is situated on the west portion of the developed Deer Creek Mine area. Its structure was excavated from original premining lands and is unaffected by the parking lot fill.

Coal Handling Facilities and Structures

Coal is delivered about 1300 feet from the mine by a conveyor belt which discharges to a surge pile. The coal is fed to the crusher through a feeder installed in the base of the 50 foot diameter storage structure. Crushed coal is moved by belt through weighing and transfer structures to a delivery belt to the Huntington Power Plant.

Coal crusher station, transfer tower, weigh bin and trommel screen structures are all grouped together near the mouth of Elk Canyon. All have pedestal type footings placed in undisturbed soils. No deep fills were required for final grading. All structures are stable, compacted and hydrologically protected. No modifications are needed to meet provisions of R645-301 of the Utah Coal Regulations.

Main Ventilation Fan, Stand-By Fan and Structures

The Main Fan and Stand-By Fan are situated behind the office and bathhouse buildings. They occupy a 80 x 160 foot pad excavated from the side of the steep slopes that form Deer Creek Canyon.

The fans sit over a vertical shaft that connects to the main entries of the mine. Stability has not been measured. The fans and electrical service facilities are located on the cut portion of the pad. Hydrological provisions include collection, diversion and sediment control through a sedimentation pond.

A small spring diversion is located near the fan (see Map 3-9, Surface Facilities Map). This diversion is only functional from late spring to fall due to severe winter conditions and low spring flow. Some thawing of the winter ice build-up could potentially flow into the disturbed area drainage system during the early spring. However, in recent years observed flows have not been substantial enough to enter disturbed areas. This potential low flow to the sediment pond would not affect the pond's designed capacity.

Auxiliary Fan (McKinnon Breakouts), ROM Conveyor and Structure

Located adjacent to and south of the ROM conveyor belt, this facility measures about 150 x 50 feet. Constructed on a rock terrace that was excavated for the conveyor belt line. Drainage from the pad flows into surface drainages system and into the sediment pond as does the conveyor structure.

Terrace Area Pad

Located to the south of the ROM conveyor, this terrace measures about 900' x 30'. Constructed on a rock terrace that was excavated for material to construct the parking and facilities fill areas (see Group III Earthen Structures). Sheet flow from this pad flows into the surface drainage system and then to the sediment pond.

Overland Conveyor and Structure

As shown on the mine facilities, the overland conveyor is constructed on steel supports with concrete footings, for the most part, no earthen structures are associated with this facility and requires no hydrological or stability discussion.

Access Road

Access to the mine involves use of a paved county road between State Highway 31 and the entrance to the mine area which is marked by a sign posted alongside of the road identifying the mine.

The county road was upgraded in 1989. The project was designed for Emery County by Jones & DeMille Engineering and constructed by Nielson Construction. Plan and profile drawings of the portion of the county road within the mine permit area are found in Map Packets 3-18 and 3-19.

The access road is included in the Emery County road system and is therefore maintained by Emery County. Sediment control (silt fence) was installed, as indicated on said drawings, by the mine operator. These will be maintained by the operator until vegetation has been reestablished.

Post-mining land use includes grazing, wildlife habitat and recreation. Therefore, the access road will not be reclaimed other than as discussed in Volume 2 and indicated on Map 4-1, Drawing# CM-10545-DR, Packet 4-1.

Historically, the road has been maintained and upgraded to accommodate established land uses. Stability has been proven by its many years of service. The inside and outside edges of the road above the crusher area are protected by conventional corrugated guard rails. Drainage from the road above the crusher area is drained to the sedimentation pond.

Fan Access

A steep unsurfaced road runs up Deer Creek from the change house area to the main fan, stand-by fan and water tank and continues up to the diversion channel inlet. This road also provides access to the south slope terrace areas.

The fans are located upon a platform bulldozed in the north slope of Deer Creek on an area 80 feet x 160 feet. The water tank is situated on a flattened area of 48 x 125 feet at a slightly higher elevation.

Other than visual inspection of the major structures associated with the Deer Creek Mine no specific monitoring is planned.

Applicant contends that all existing structures meet the performance standards of R645-301 of the Utah Coal Regulations and require no modification.

R645-301-521.200

SIGNS AND MARKERS

Signs and markers will be made of durable material, such as thin sheet metal, and will be maintained during the conduct of all activities to which they pertain or until bond release. Each type of sign and marker will be uniform design and shape and will be located so as to be easily seen and read.

Perimeter, buffer zone and topsoil markers will be approximately 10" x 14", be post mounted, and read "Perimeter Do Not Disturb, Buffer Zone Do Not Disturb, or Topsoil" respectively.

On the day in which blasting occurs, a portable sign which says "Warning: Explosives in Use" will be displayed near the entrance sign. The immediate vicinity of blasting will be marked with red flagging or red cones.

A mine permit identification sign will be placed at each point of access from public roads to areas of surface operations and facilities within the permit area. The sign will state the facility's name, owner/operator address and phone number, Utah Reclamation Permit No., MSHA ID No., and UPDES Permit No. The sign size will be approximately 40" wide by 18" high.

Upon cessation of operations or bond release signs and markers will be removed as appropriate.

R645-301-515

REPORTING AND EMERGENCY PROCEDURES

In the event any potential hazard exists, develops or occurs in association with slides and/or impoundment structures which may have an adverse effect on the public, health, safety, property and environment, the Division will be promptly notified and the Operator commits to comply with any remedial measures, such as temporary berms, etc., required to protect and ensure the health and safety of the public, employees and property of the operator.

The Deer Creek Mine facility conducts routine inspections weekly. Should a hazard exist or occur, personnel have been instructed to notify the Mine Manager, who will coordinate and implement any emergency procedures and remedial measures to be taken.

R645-301-515.300

TEMPORARY CESSATION OF OPERATIONS

As stated in the regulations:

515.320. Before temporary cessation of coal mining and reclamation operations for a period of 30 days or more, or as soon as it is known that a temporary cessation will extend beyond 30 days, each person who conducts coal mining and reclamation operations will submit to the Division a notice of intention to cease or abandon operations. This notice will include:

515.321. For the purposes of UNDERGROUND COAL MINING AND RECLAMATION ACTIVITIES, a statement of the exact number of surface acres and the horizontal and vertical extent of subsurface strata which have been in the permit area prior to cessation or abandonment, the extent and kind of reclamation of surface area which will have been accomplished, and identification of the backfilling, regrading, revegetation, environmental

monitoring, underground opening closures and water treatment activities that will continue during the temporary cessation.

PacifiCorp will notify the Division of the date of temporary cessation of coal mining operations. All portals will be sealed according MSHA specifications.

The following data will be provided to comply with the listed regulations:

Deer Creek Mine:

- Exact number of surface acres (disturbed).
- Horizontal and Vertical Extent of Subsurface Which Have Been in the Permit Area.
- Reclamation schedule.
- Description of environmental monitoring including.
- Mine Closures: All portal openings will be sealed as specified in 30CFRPart 75.335 or as specified in the approved ventilation plan.
- Water Treatment Activities: Description of hydrologic conveyance structures to be maintained and monitored as specified in the MRP.

In preparation of temporary cessation or abandonment of portion of the mine, documentation of mining equipment and mine extension material to be abandoned in place and removed from the mine will be submitted to Bureau of Land Management and Division of Oil, Gas & Mining. PacifiCorp will notify the appropriate regulatory agencies prior to abandonment to verify the equipment/extension material removal or left in-place. The following table is a list of the material abandoned during operations at the Deer Creek Mine (refer to Figure R645-301-500G).

INSERT FIGURE R645-301-500G

ABANDONED EXTENSION MATERIAL & EQUIPMENT

ITEM	Lease #	LOCATION	QUANTITY
Belt Head Roller	Federal Lease # SL-070645/U-02292	1st South Conveyor Head Roller	1
8kv Mine Power Feeder Cable	Federal Lease # SL-070645/U-02292	1st South (Main West to Bin)	. 8,000'
Communication Cable	Federal Lease # SL-070645/U-02292	1st South (Main West to Bin)	. 8,000'
4" Aluminum Pipe	Federal Lease # SL-070645/U-02292	1st South (Main West to Bin)	3,000'
6" Aluminum Pipe	Federal Lease # SL-070645/U-02292	1st South (Main West to Bin)	3,000'
4" Steel Pipe	Federal Lease # SL-070645/U-02292	1st South (Main West to Bin)	4,000'
Steel Track & Pipe	Fee	McKinnon Workings	Exact Quantity Unknown

Abandonment of Machinery: To comply with Section 10 of the Federal Coal Lease Stipulations, PacifiCorp will request approval prior to abandonment of machinery within the mine. R645-301-500: Table 8 list machinery abandoned in the Deer Creek Mines (refer to Figure R645-301-500G).

LEASE #	LOCATION	TYPE OF EQUIPMENT	BUREAU OF LAND MANAGEMENT APPROVAL DATE
Federal Lease U-040151	D North (1988)	111 Longwall Shields and Face Conveyor	Stipulation not included in lease at the time of abandonment
Federal Lease U-040151	5th Right (1985)	108 Longwall Shields and Face Conveyor	Stipulation not included in lease at the time of abandonment
Federal Lease U-040151	3rd South Mains (inby xc-72)	Lee Norse Roof Bolter	Stipulation not included in lease at the time of abandonment (area caved, 6/91)
Federal Lease U-040151	3rd South Mains (inby xc-72)	Long Airdox Feeder Breaker	Stipulation not included in lease at the time of abandonment (area caved, 6/91)
Federal Lease U-040151	3rd South Mains (inby xc-72)	Belt Frames (3), motor & gearboxes removed	Stipulation not included in lease at the time of abandonment (area caved, 6/91)
Federal Lease U-040151	3rd South Mains (inby xc-72)	Diesel Duster Tank & Trailor (motor & Compressor Removed)	Stipulation not included in lease at the time of abandonment (area caved, 6/91)
Federal Lease U-040151	3rd South Mains (inby xc-72)	Isuzu Pickup	Stipulation not included in lease at the time of abandonment (area caved, 6/91)
Federal Lease U-040151	3rd South Mains (inby xc-72)	Rail Runner (Track Jeep)	Stipulation not included in lease at the time of abandonment (area caved, 6/91)
Federal Lease U-06039	10th & 11th East	140 Longwall conveyor line pans	PacifiCorp on November 29, 1999 submitted to the BLM a "Lease Term and Condition Modification Request, Removal of Machinery and notified DOGM April 5, 2000.
Federal Lease U-06039	12th & 15th East	140 Longwall conveyor line pans	PacifiCorp on November 08, 2000 submitted to the BLM a "Lease Term and Condition Modification Request, Removal of Machinery and notified DOGM January 10, 2001.
Federal Lease U-06039	9th East	140 Longwall conveyor line pans	PacifiCorp on July 16, 2001 submitted to the BLM a "Lease Term and Condition Modification Request, Removal of Machinery and notified DOGM on July 16, 2001.

Abandonment of this machinery is insignificant compared to the other steel materials that must be left underground. Ferrous materials include steel roofbolts, steel wire ceiling mesh and steel covered longwall support cans. These materials are not removed due to safety concerns in all underground coal mines.

Although the shields contained emulsified oil which could eventually enter the hydrologic system, it will not have a significant impact on the hydrologic balance in the area based on the following criteria:

- It will be a period of many years prior to the sediments being saturated to reach potential areas of discharge. Hydrologic studies have verified that the water intercepted in the mine is not hydraulically connected to the surface water systems (refer to Hydrologic Section, Volume 9 for complete details).
- The combination of water chemistry (pH neutral to slightly alkaline), temperature, and lack of oxygen will impede the rate of oxidation of the metal.
- The combination of specific gravity and dip of the geology will potentially carry any migration away from the surface waters (lowest portal - long term discharge point is Deer Creek Canyon intake portals, refer to Figure R645-301-500G).
- The total volume of the potential contaminants is so minute it will be diluted within a short distance. Initial mixture is 95% water and 5% emulsified oil.
- No municipal or domestic water uses exist within 5 miles of the sites.

R645-301-536

UNDERGROUND DEVELOPMENT WASTE

Introduction

There are three waste rock disposal areas associated with the Deer Creek Mine. The first location (Area 1) in known as the main yard extension, located north of the access road between the parking lot and the truck loadout. Area 1 was utilized for placement of waste rock until 1988 when it reached its capacity.

The second location (Area 2) is known as the Elk Canyon Storage Pad, located on the western slope at the mouth of Elk Canyon. Area 2 was utilized for placement of waste rock when Area 1 reached its capacity and while Area 3 was being permitted. Area 2 is no longer used for waste rock disposal.

The third location (Area 3) is located east of the Huntington Power Plant within Section 6 T17S, R8E, SLM. Area 3 was approved by DOGM September 13, 1988 and currently serves the waste rock disposal requirements of the Deer Creek Mine. All permitting criteria for Area 3 is discussed in Appendix XII, Volume 10. Area 1 and 2 are discussed on the following pages.

The quantity of material to be disposed of is estimated using the past history of waste rock generated by the mining operations. The average quantity generated per year is approximately 16,000 cubic yards based on annual coal production of 4.5 million tons.

Potential sources of waste rock at Deer Creek Mine are (1) rock slopes and raise construction, (2) entry rehabilitation, and (3) trommel screen reject from the breaker station.

Yard Extension - Area 1

Disposal Location

The waste rock disposal Area 1 was an extension of the existing fill embankment located between the parking lot and the truck loadout as shown on Map 3-9. This waste rock disposal site contains approximately 90,000 cubic yards. Chemical characteristics of waste rock taken from roof, floor or splits of Blind Canyon or Hiawatha Coal Seams during mining have been analyzed for chemical characteristics. Representative sample analysis of the waste rock is shown in Exhibit C. The chemical and physical characteristics of the strata present in the lower Blackhawk Formation which includes rocks immediately above and below the Blind Canyon Seam has been identified by the analyses. Initial sampling (pre 1983) identified that the floor of the Blind Canyon Seam has a potentially high sodium absorption ratio and the Blind Canyon Seam roof is potentially high in pyrite/marcasite. No other abnormally high readings were identified.

A review of the data concerning the sodium absorption ratio of the Blind Canyon floor reveals that three out of four samples which were taken of that zone, have values less than 5.0 (4.8, 1.5 and 1.3). One sample has a value of 60.4 which raised the sample mean to 17.36 and created a high standard deviation of 25.14. To verify the initial results, PacifiCorp instituted yearly in-mine sampling at the Deer Creek and Cottonwood mines (refer to Exhibit C). Data indicates that the SAR values for each seam, (including the roof, coal seam and floor), average less than 2.0, with a maximum of 5.92 (Blind Canyon roof). Initial sampling data, (pre 1983), is included in Exhibit C has a historical data reference only. PacifiCorp was unable to locate the actual lab analysis, site location and year of sample collection.

During the initial sampling (pre 1983), three samples of the Blind Canyon Seam roof and floor were tested for their pyrite/marcasite content. Two of these core samples are from drill hole B-124 and the other from EM-12C have a pyrite/marcasite content of 0.2% and 0.5% respectively. The third sample from drill hole EM-23C has a pyrite /marcasite value of 15.8%. This core contained vertical fractures which had secondary deposits of FeS_2. This sample is not representative of the Blind Canyon Seam roof pyrite/marcasite content as a whole but does show that localized high concentrations of iron-sulfides do occur. Yearly in-mine sampling initiated in 1993 at the Deer Creek and Cottonwood mines (refer to Exhibit C) indicates that the Total Sulfur content values for each seam, (including the roof, coal seam and floor), average less than 0.6%, with a maximum of 0.66 (Blind Canyon roof).

In December 1983, construction of the 2,062 foot rock slope tunnel in Main West across the Pleasant Valley Fault in the Deer Creek Mine, generated approximately 18,000 yds^3 of waste rock (in-place). The majority of this waste rock was transported outside for disposal within the main yard extension Area 1.

Entry rehabilitation generates an undetermined amount of waste rock during mine life. Waste rock from entry rehabilitation will be gobbed until available space is exhausted. Excess waste rock will be transported from the mine and disposed of accordingly.

Maximum extraction of coal reserves by conventional methods includes unwanted rock in the run-of-mine product. Deer Creek Coal Handling System is designed to extract 2" and smaller waste rock from the product stream which 10% of reject is carbonaceous. However, waste rock from the product stream poses no serious threat, as all coal waste along with any potential pyritic material diluted with rock material of a low sulfur value will be buried and compacted with a least a 4-foot coal free cover.

No extraneous waste materials such as brattice cloth, wood, or metal trash will be dumped in the sites.

All waste rock will be transported and disposed of in a controlled manner as outlined in the plan which follows:

Estimated Waste Rock Volumes

(1) Main West Rock Slope:

(2062' x 18' wide x 10' high) - 27 =	13,746.7 cy
Assume 31% overbreak =	4,253.3
Total	18,000 cy
Use 150% swell factor	
Total equals	27,000 cy

(2) Entry Rehabilitation:

100,000 cy x 21%	
*Assume approximately 21% will require surface disposal.	21,000 cy

(3) Trommel Reject:

35 years x 5 ton/day x 240 day/year =	42,000 tons
42,000 tons x 2,000 lbs/ton - 92 lbs/ft^3 =	913,043 ft^3
913,043 ft^3 - 27 ft^3/cy =	33,816 cy
TOTAL VOLUME	81,816 cy

The operator commits to sample roof, floor and mid-seam material in active sections annually. A representative sample will be taken in areas mined within a given year. The locations where the samples are taken will be sufficient to include the various lithologies encountered during mining. These locations will be plotted on a map for future reference. The samples will be analyzed for acid-and/or toxic-forming potential in accordance with the Divisions Guidelines for the Management of Topsoil and Overburden. The sample location map and laboratory analyses, including raw data, will be submitted to the Division annually.

Design

Design of the disposal site and fill was under the direction of a registered professional engineer and is certified. The existing fill is constructed of material taken from the south slope of Deer Creek Canyon and from the sediment pond excavation. A stability analysis has been performed on the existing fill and has shown it to be stable and a factor of safety of 1.5 was obtained. The

analysis was performed under the direction of Rollins, Brown and Gunnell, Inc., a professional engineering consultant firm (refer to Appendices).

In August of 1978, Utah Power & Light Company (now Rocky Mountain Power) contracted Dames & Moore to perform a geotechnical study in evaluating soils of the area now occupied by the Deer Creek Mine sedimentation pond. Four test holes were drilled.

The pond was constructed in 1979 and is located within 600 feet directly east of the proposed waste rock disposal site.

The applicant states that due to the close proximity of the geotechnical study to the waste rock site, data obtained from this study is applicable.

The sedimentation pond and the waste rock disposal site are separated in elevation by approximately 100 feet.

The sedimentation pond is situated at approximately 7,350 feet above sea level and is stratigraphically located near the base of the Starpoint Sandstone. Bedrock in this area is at or near the surface which is also comprised of a fine grained sandstone.

No springs or seeps exist in the area of the waste rock disposal site because of the lack of any recharge in the Starpoint Sandstone formation.

Natural drainages which existed prior to mining activities have been diverted as required. A description of mine site diversions is in the Operation Plan. A summary of hydrologic information concerning the East Mountain area is included in the "Annual Hydrologic Report" submitted to the Division each year.

Map 3-17 shows the present slope and the anticipated final slope. Selected cross-sections also show present and anticipated slopes. Finished slopes will be 2H:1V.

Runoff from areas above and adjacent to the fill is collected in open ditches and directed away from the outslope of the fill to the drainage system in the mine yard. Grade of the fill is sloped back from the outslope of the fill. Runoff from the top surface, therefore, will drain back from the outslope and collect in the "disturbed" drainage system. Runoff from the outslope of the fill drains to a catch basin near the truck loadout where it is collected and conveyed to the sediment pond. This drainage collection system meets the requirements of a 10 year/24 hour storm event. The location of these drainage ditches and catch basins are found on Map 3-9.

Construction and Operation

Waste rock from slope construction and entry rehabilitation will be transported from the mine to the disposal area and placed in horizontal lifts and in a controlled manner by rubber-tired end-dumping vehicles. Equipment will vary depending on contractor employed to do the work.

Safety measures prescribed by MSHA will be maintained throughout the life of the disposal site. Rock from the trommel screen will be hauled by truck from the reject pile and placed with the other waste rock from the entry rehabilitation and slope construction sites.

All waste rock will be compacted in 4-foot lifts at the base of the existing fill, providing a working surface and a buttress for stability for the existing fill. A crawler or rubber-tired dozer will be used in the continuous dump-spread compaction fill method.

Maintenance

Maintenance of the disposal site includes inspections and adequate drainage. Inspections for fill stability will be performed quarterly by a registered professional engineer in addition to periodic observations of fill placement, compaction and revegetation. The inspecting engineer will submit a certified report of approved design compliance to the Division within two weeks of each inspection. A copy of each inspection report will be retained at the mine site. Drainage systems will be inspected and cleaned yearly to ensure adequate drainage of the fill.

Reclamation

The fill is deemed to be compatible with the natural surroundings and fulfill the post-mining land use. Drainage will be established to carry runoff from the fill into stabilized channels designed to adequately pass the 100 year/24 hour precipitation event. Vegetation will be established on the fill as outlined in the Reclamation Plan. Details of the final drainage channel locations are also included in the Reclamation Plan. Inactive side slopes areas fall under the interim revegetation areas of the mine site and will be revegetated accordingly.

Sediment removal from Deer Creek's pond is marked by reaching a 60% design capacity for sediment in the pond.

Sediment will be analyzed for metals and pH prior to its placement at the base of the rock disposal fill in a special drying containment pond constructed from fine material segregated for this purpose. Once dried, material will be mixed with surrounding heavier rocks and compacted and covered with at least four feet of non-toxic covering.

DEER CREEK MINE

Waste Rock Hydrologic Drainage Calculations For Yard Extension - Area 1
(refer to Exhibit D for hydrologic charts and tables)

Given:

Area:	3.0 Acres
Slope:	50%
Slope Length:	300 Feet
Storm Event:	2 Year/24 Hour
Methodology:	Soil Conservation Service
CN	85 (see Table 6.4)
Precipitation	1.8 (NOAA 2 Year/24 Hour)

$$Q = \frac{(P-0.2S)^2}{(P+0.8S)} \qquad S = \frac{1000}{CN} - 10 = 1.76$$

$$Q = \frac{(1.8 - 0.2 \times 1.76)^2}{(1.8 + 0.8 \times 1.76)} = \frac{2.10}{3.21}$$

$$Q = .65 \text{ Inches}$$

$$tL = \frac{^{0.8}(S+1)^{0.7}}{1900\, y^{0.5}} = \frac{300^{0.8}(1.76+1)^{0.7}}{1900\,(50^{0.5})} = \frac{194.5}{13433}$$

$$tL = .0145$$

tc = $\frac{tL}{tc} = \frac{tL}{0.6} = \frac{.0145}{0.6}$ (see R645-301-500 Exhibit D)

tc = .024

qp = 1000 $\frac{csm}{Inch}$ x $\frac{3.0\ Acres}{640\ Acre/Mile^2}$ x .65 Inches

qp = 3.05 CFS

By inspection, the existing 1.0' ditch is sufficient to handle the peak flow of a 2 year/24 hour storm event.

Underground Development Waste- Elk Canyon Storage Upgrade- Area 2

Approximately 24,500 cubic yards of underground development waste and trommel screen rejects has been used as backfill to construct a storage pad with an active storage area of approximately 19,500 ft^2. This area is used for additional coal and mine material storage, providing up to approximately 17,000 additional tons of coal storage.

The construction activities of the backfill and the subsequent use for storage of the area were confined within the existing disturbed area of the canyon. Minor modifications to the undisturbed drainage structure were required.

Final reclamation of the material can be done within the immediate area of the canyon. The following maps are used to describe the details of the Elk Canyon Storage - Area 2:

Map 3-17A - DWG. No. CM-10774-DR, Sheet 1 of 2 "Elk Canyon Site Plan", March 4, 1988

Map 3-17B - DWG. No. CM-10774-DR, Sheet 1 of 2 "Hydrological Area Map"

Map 3-17C - DWG. No. CM-10774-DR, Sheet 2 of 2 "Elk Canyon Cross Sections", Feb. 18, 1988

Construction Plan

Regulation R645-301-528.310 allows underground development waste and spoil to be used as backfill on the disturbed area of the mine site. The area where the fill is to be placed has been previously disturbed and no topsoil or vegetation exists.

The upgrading for the fill structure using waste rock was inspected for stability by a registered professional engineer during the construction phase and will be inspected at least quarterly.

Slope Stability

The fill was placed in horizontal lifts 18 inches thick or less and compacted as necessary to insure mass stability. The fill slope was built on 1V:1.5H and meets a long-term static safety factor of 1.5. The engineering analysis to show this is provided by Rollins, Brown & Gunnel letter dated March 15, 1988 located Exhibit E

The area where the fill is built is dry and the need for an under-drainage system was not required. There is an existing culvert system which bypasses the canyon drainage past the disturbed area.

Surface Runoff

A hydrologic drainage analysis and ditch design is attached. As stated in the analysis the road is sloped at 1% into the hillside and will serve as a surface ditch. The velocity of the run-off doesn't require rip-rap protection.

All drainage from this area flows along the road to the tipple area and into the sediment pond. The surface area of the fill is sloped at 3% on the upper section.

The concrete inlet structure on the second side canyon drainage has been modified to protect the undisturbed drainage in this area. A wing wall structure has been added to the existing inlet and extends 12" above the final grade of the fill material. (Refer to DWG DS-998-B)

The main Elk Canyon undisturbed inlet structure is protected with a silt fence structure along the toe of the fill. The new fill surface to be serviced by the silt fence is approximately 150 ft.

Chemical Analysis

The underground development waste and trommel reject is of the same origin and character as that previously stated herein.

Final Reclamation

Once the need for this storage area no longer exists the material will be pushed against the west canyon wall and the pad area will be backfilled. Refer to final cross-sections for details, Map 3-17C.

SLOPE STABILITY ANALYSIS -ELK CANYON STORAGE PAD

The size of the storage pad in Elk Canyon has been increased by building up the slope on the west side of the canyon. The material that was used to construct the slope consists of underground development waste and trommel reject. This material was sampled and tested to determine its suitability as fill for the slope (see attached soils report by Rollins, Brown and Gunnell).

The method used to determine the stability is Bishop's Simplified Method of Slices, T. William Lambe and Robert V. Whitman, Soil Mechanics, 1969, John Wiley and Sons, New York. The slope will be 1.5H:1V during the operating period. The maximum height of the slope is 50 feet. The soil density is 98.2 pounds per cubic feet, the angle of internal friction is 40.5 degrees and the cohesion value is Ø. The slope is well drained with no ground water anticipated during the life of the project. The resulting safety factor is determined to be 1.5, which is adequate (refer to Exhibit E: RG&B reported dated March 15, 1988).

ELK CANYON STORAGE PAD DRAINAGE DITCH - HYDROLOGICAL ANALYSIS AND DITCH DESIGN

Scope

The construction of the storage pad at Elk Canyon will change the drainage characteristics of the area and an analysis and design of the drainage structures is required. This report will detail the

procedures used to design the ditch which will convey the disturbed area runoff into the surface collection system.

Procedures

The areas which will contribute runoff to the disturbed area were marked on Map 3-17A Drawing number CM-10774-DR, Elk Canyon Site Plan. These areas have not increased in size because of the construction of the storage pad but were necessary to determine the flow rate for the ditch design. The peak flow for a 10 year, 24 hour storm event was determined using a computer program, "Storm Hydrograph Program", by Richard H. Hawkins and Kim A. Marshall, Utah State University Foundation, Logan, Utah. The data used for input are tabulated below:

Drainage Area #	Area Acres	Curve Number	Time Of Concentration
I	2.481	83	3 Min.
II	0.597	77	1
III	0.398	83	1
IV	0.723	83	1

Total Area 4.199 Acres	=	0.007 Square Miles
Weighted Average Curve Number	=	82
Time of Concentration = 4 Minutes	=	0.007 Hours
Rainfall Depth - 10 Year, 24 Hour Storm Event	=	2.2 Inches

The peak flow rate from the program is 0.516 cubic feet per second for the entire 4.2 acres (see Exhibit E). The ditch is sized for the entire amount, although the total amount is not collected until it reaches the end of the new road at Station 0+78.8.

The ditch that will convey this runoff will be incorporated into the road itself as shown in the Exhibit F.

Flow Rate = 0.516 CFS

Ditch Slope	Depth	Width	Velocity
3%	.086'	8.71'	1.38
10%	.069'	6.95'	2.15

Because of the low velocity of the runoff in the ditch, no special lining material is necessary to prevent erosion of the base material.

During final reclamation, the portals will be sealed as depicted in Part 4 of the MRP. The portal liners and headwalls will be broken up and hauled to the Deer Creek Waste Rock Site.